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DIMENSIONS	IN.	MM
Wheel base	55.0	1397
Seat height	29.5	749
Road clearance	4.9	124.5
Trail	3.5	88.9
Rake	23 degrees	

CAPACITIES	U.S.	LITERS
Fuel tank (including reserve)	4.6 gallons	17.41
Reserve/Low Fuel Indicator at	0.4 gallons	1.51
Oil tank	2.5 quarts	2.37
Transmission	1.0 quart	0.95

WEIGHT-U.S. MODELS	LBS.	KG
Dry weight	440	199.58
GVWR	820	371.95
Load capacity	380	197.17

**NOTE**

Gross Vehicle Weight Rating (GVWR) (maximum allowable loaded vehicle weight) and corresponding Gross Axle Weight Ratings (GAWR) are given on an information decal located on the steering head.

TIRE AND POSITION	SOLO RIDING	GVWR
<b>1999 Models:</b> Front-Dunlop Sportmax Radial II 120/70 ZR 17 D204F	32 PSI (220 kPa)	36 PSI (248 kPa)
<b>1999 Models:</b> Rear-Dunlop Sportmax Radial II 170/60 ZR 17 D204	36 PSI (248 kPa)	38 PSI (262 kPa)
<b>2000 Models:</b> Front-Dunlop Sportmax Radial II 120/70 ZR 17 D207F	32 PSI (220 kPa)	36 PSI (248 kPa)
<b>2000 Models:</b> Rear-Dunlop Sportmax Radial II 170/60 ZR 17 D207	36 PSI (248 kPa)	38 PSI (262 kPa)

**⚠ WARNING**

Do not inflate any tire beyond its maximum inflation pressure as specified on tire sidewall. Overinflation may cause tire to suddenly deflate which could result in death or serious injury.

## TORQUE VALUES

ITEM	TORQUE		NOTES
	in-lbs	Nm	
Brake hand lever nut	44-62 in-lbs	5.0-7.0 Nm	metric, page 2-23
Brake hand lever pivot bolt	4-13 in-lbs	0.5-1.5 Nm	LOCTITE ANTI-SEIZE, page 2-23
Brake rotor drive pin nut ( <b>1999 Models Only</b> )	7.5-10 ft-lbs	10.2-13.6 Nm	page 2-10
Chin fairing bolts	9-10 ft-lbs	12.2-13.6 Nm	LOCTITE THREADLOCKER 243 (blue), page 2-94
Clutch cable, primary cover fitting	3-5 ft-lbs	4-6.87 Nm	turn clockwise to install, page 2-81
Clutch clamp screw	30-33 in-lbs	3.4-4.0 Nm	metric, page 2-81
Drive support nut	30-35 ft-lbs	40.7-47.4 Nm	page 2-90
Exhaust header nuts	6-8 ft-lbs	8.1-10.8 Nm	page 2-87
Fender mounting screw, lower	10-15 in-lbs	1.1-1.7 Nm	page 2-91

ITEM	TORQUE		NOTES
Fender mounting screw, upper	20-25 in-lbs	2.3-2.8 Nm	metric, page 2-91
Footrest frame nuts	13-16 ft-lbs	17.6-21.7 Nm	LOCTITE THREADLOCKER 272 (red), page 2-88, page 2-89
Footrest mounting bolt	10-15 ft-lbs	13.6 -20.3 Nm	LOCTITE THREADLOCKER 243 (blue), page 2-88, page 2-89
Front axle nut	48-53 ft-lbs	65.1-71.9 Nm	LOCTITE THREADLOCKER 243 (blue), metric, page 2-10
Front axle pinch screw	13-15 ft-lbs	17.6-20.3 Nm	metric, page 2-10
Front brake caliper banjo bolt	16-20 ft-lbs	21.7-27.1 Nm	metric, page 2-27
Front brake caliper bleeder valve	3-5 ft-lbs	4.1-6.8 Nm	metric, page 2-26
Front brake caliper mounting screws	22-25 ft-lbs	29.8-33.9 Nm	LOCTITE THREADLOCKER 272 (red), page 2-27
Front brake caliper pad hanger pin	11-14.5 ft-lbs	14.7-19.6 Nm	metric, page 2-27
Front brake caliper pin plug	1.5-2.1 ft-lbs	2.0-2.9 Nm	page 2-27
Front brake caliper screw	14.5-18 ft-lbs	19.6-24.4 Nm	metric, page 2-26
Front brake line clamp screw	30-35 in-lbs	3.4-4.0 Nm	page 2-30
Front brake master cylinder clamp screw	80-90 in-lbs	9.0-10.2 Nm	metric, page 2-24
Front brake rotor carrier screw (1999 Models Only)	20-22 ft-lbs	27.1-29.8 Nm	LOCTITE THREADLOCKER 272 (red), page 2-9
Front brake switch screw	7-13 in-lbs	0.8-1.5 Nm	page 2-23
Front caliper banjo bolt	16-20 ft-lbs	21.7-27.1 Nm	metric, page 2-27
Front caliper bleeder valve	3-5 ft-lbs	4.1-6.8 Nm	metric, page 2-26
Front fork bolt	22-29 ft-lbs	29.8-39.3 Nm	page 2-61
Front fork center bolt	22-29 ft-lbs	29.8-39.3 Nm	metric, page 2-61
Front fork triple clamp screw, large	18-20 ft-lbs	24.4-27.1 Nm	LOCTITE ANTI-SEIZE, page 2-62
Front fork triple clamp screw, small	10-12 ft-lbs	13.6-16.3 Nm	LOCTITE ANTI-SEIZE, page 2-62
Front master cylinder banjo bolt	16-20 ft-lbs	21.7-27.1 Nm	metric, page 2-24, page 2-30
Front master cylinder cover screws	9-13 in-lbs	1.0-1.5 Nm	page 2-24, page 2-28
Fuel tank bracket screw	9-11 ft-lbs	12.2-14.9 Nm	page 2-95
Handlebar clamp screw	10-12 ft-lbs	13.6-16.2 Nm	tighten front screws first, page 2-83
Instrument support screws	4-5 ft-lbs	5.4-6.8 Nm	LOCTITE THREADLOCKER 243 (blue), page 2-82
Muffler clamp	40-45 ft-lbs	54.2-61.0 Nm	discard after use, page 2-86, page 2-87
Muffler front mounting support	17-19 ft-lbs	23-25.8 Nm	page 2-86
Muffler rear mounting support	17-19 ft-lbs	23-25.8 Nm	page 2-86
Muffler support mounting bolt, front	30-33 ft-lbs	40.7-44.7 Nm	page 2-86
Muffler Z bracket nuts	8-10 ft-lbs	10.8-13.6 Nm	page 2-86

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ITEM	TORQUE		NOTES
Oxygen sensor	42-45 ft-lbs	56.9-61 Nm	LOCTITE ANTI-SEIZE, page 2-87
Rear axle nut	66-73 ft-lbs	89.5-98.9 Nm	metric, page 2-15, page 2-70
Rear brake caliper banjo bolt	16-20 ft-lbs	21.7-27.1 Nm	metric, page 2-35
Rear brake caliper bleeder valve	3-5 ft-lbs	4.1-6.8 Nm	metric, page 2-30, page 2-35
Rear brake caliper mounting screw, large	18-22 ft-lbs	24.4-29.8 Nm	metric, page 2-35
Rear brake caliper mounting screw, small	14.5-18 ft-lbs	19.6-24.4 Nm	metric, page 2-35
Rear brake caliper pad hanger pin	11-14.5 ft-lbs	14.7-19.6 Nm	metric, page 2-35
Rear brake caliper pin plug	1.5-2.1 ft-lbs	2.0-2.9 Nm	page 2-35
Rear brake lamp switch	7-8 ft-lbs	9.5-10.8 Nm	LOCTITE SEALANT WITH TEFLON, page 2-38
Rear brake reservoir mounting screw	12-15 in-lbs	1.4-1.7 Nm	page 2-32
Rear brake rotor screw	35-40 ft-lbs	47.5-54.2 Nm	LOCTITE THREADLOCKER 272 (red), metric, page 2-15
Rear caliper banjo bolt	16-20 ft-lbs	21.7-27.1 Nm	metric, page 2-36
Rear master cylinder banjo bolt	16-20 ft-lbs	21.7-27.1 Nm	metric, page 2-32, page 2-37
Rear master cylinder mounting screws	8-10 ft-lbs	10.8-13.6 Nm	LOCTITE THREADLOCKER 243 (blue), metric, page 2-32
Rear shock, front bolt	49-53 ft-lbs	66.4-71.9 Nm	tighten from bolt side only, page 2-72
Rear shock, rear bolt	30-33 ft-lbs	40.7-44.7 Nm	metric, page 2-70, page 2-72
Rear tiebar	30-33 ft-lbs	40.7-44.7 Nm	page 2-70
Seat lock nuts	20-25 in-lbs	2.3-2.8 Nm	page 2-100
Sprocket bolt	55-65 ft-lbs	74.6-88.1 Nm	LOCTITE THREADLOCKER 272 (red), page 2-15
Sprocket cover mounting screw	12-17 in-lbs	1.4-1.9 Nm	LOCTITE THREADLOCKER 222 (purple), page 2-90
Sprocket cover screw	4-6 ft-lbs	5.4-8.6 Nm	LOCTITE THREADLOCKER 243 (blue), page 2-90
Swingarm isolator bolts	100-110 ft-lbs	135.6-149.1 Nm	LOCTITE THREADLOCKER 272 (red), page 2-70
Swingarm pinch screw	18-20 ft-lbs	24.4-27.1 Nm	LOCTITE THREADLOCKER 243 (blue), page 2-69, page 2-70
Swingarm threaded rod	10-13 ft-lbs	13.6-17.6 Nm	LOCTITE THREADLOCKER 222 (purple), initial torque only, page 2-69
Swingarm/drive support bolt	4-6 ft-lbs	5.4-8.6 Nm	LOCTITE THREADLOCKER 243 (blue), page 2-90
Switchgear housing screws, left side	25-33 in-lbs	2.8-3.7 Nm	metric, page 2-81
Switchgear housing screws, right side	12-17 in-lbs	1.4-1.9 Nm	metric, page 2-78
Tail section bolts	9-11 ft-lbs	12.2-14.9 Nm	page 2-100
Turn signal nuts	96-120 in-lbs	10.8-13.6 Nm	metric, page 2-100
Valve stem nut	42-44 in-lbs	4.7-5.0 Nm	page 2-19

## GENERAL

### **⚠ WARNING**

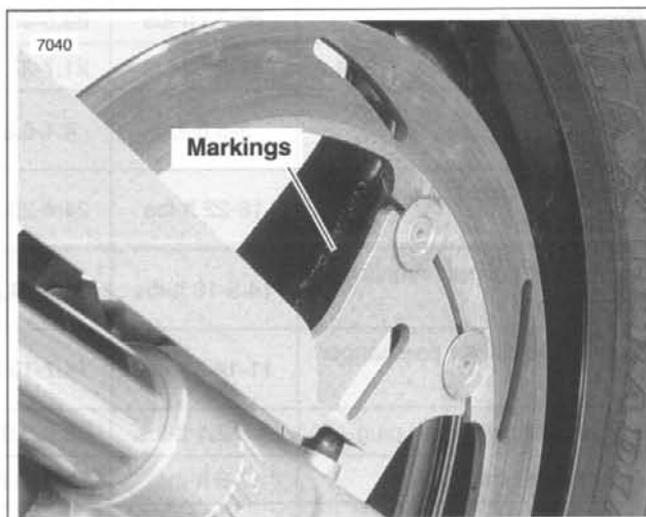
Tires must be correctly matched to wheel rims. Only the tires listed in the fitment tables below can be used for replacement. Mismatching tires and rims can cause damage to the tire bead during mounting. Using tires other than those specified can adversely affect motorcycle handling and could result in death or serious injury.

Tire sizes are molded on the sidewall. Rim size and contour are marked on the rim's exterior surface. See Figure 2-1.

Example: **MT 3.5 x 17.0 DOT**

- **MT** designates the rim contour.
- **3.5** is the width of the bead seat measured in inches.
- **17.0** is the normal diameter of the rim in inches, measured at the bead seat diameter.
- **DOT** means that the rim meets Department of Transportation Federal Motor Vehicle Safety Standards.

See the tables below.



**Figure 2-1. Rim Markings**

**Table 2-1. Tire Fitment-Tubeless Cast Wheels**

WHEEL SIZE & POSITION	CONTOUR & RIM SIZE	RIM VALVE HOLE DIAMETER	DUNLOP SPORTMAX RADIAL II TIRE SIZE
17 in. – Front	MT 3.5 x 17.0 DOT	0.33 in.	<b>1999 Models:</b> 120/70 ZR17 D204F <b>2000 Models:</b> 120/70 ZR17 D207F
17 in. – Rear	MT 5.0 x 17.0 DOT	0.33 in.	<b>1999 Models:</b> 170/60 ZR17 D204 <b>2000 Models:</b> 170/60 ZR17 D207

**Table 2-2. Tire Fitment-Tubeless Aluminum P/M Wheels**

WHEEL SIZE & POSITION	CONTOUR & RIM SIZE	RIM VALVE HOLE DIAMETER	DUNLOP SPORTMAX RADIAL II TIRE SIZE
17 in. – Front	MT 3.5 x 17.0 DOT	0.33 in.	<b>1999 Models:</b> 120/70 ZR17 D204F <b>2000 Models:</b> 120/70 ZR17 D207F
17 in. – Rear	MT 5.5 x 17.0 DOT	0.33 in.	<b>1999 Models:</b> 170/60 ZR17 D204 <b>2000 Models:</b> 170/60 ZR17 D207

## GENERAL

The full 17 digit serial or Vehicle Identification Number (V.I.N.) is stamped on the steering head and on an information decal at the same location.

See Figure 2-2. An abbreviated V.I.N. is stamped on the front left side of the crankcase.

**NOTE**

See Figure 2-3. Always give the V.I.N. or abbreviated V.I.N. when ordering parts or making inquiries about your Buell motorcycle.

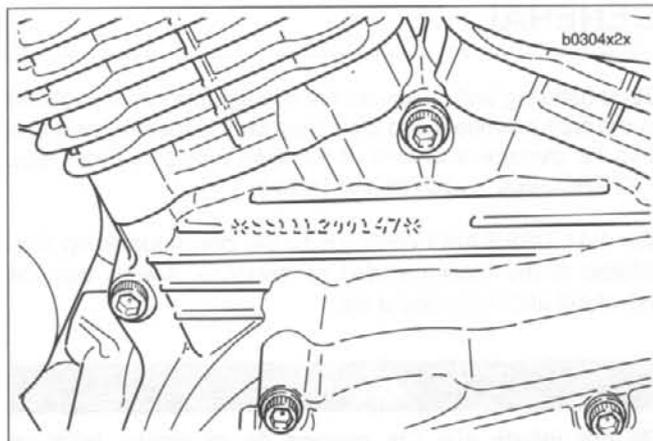


Figure 2-2. Abbreviated V.I.N. Location

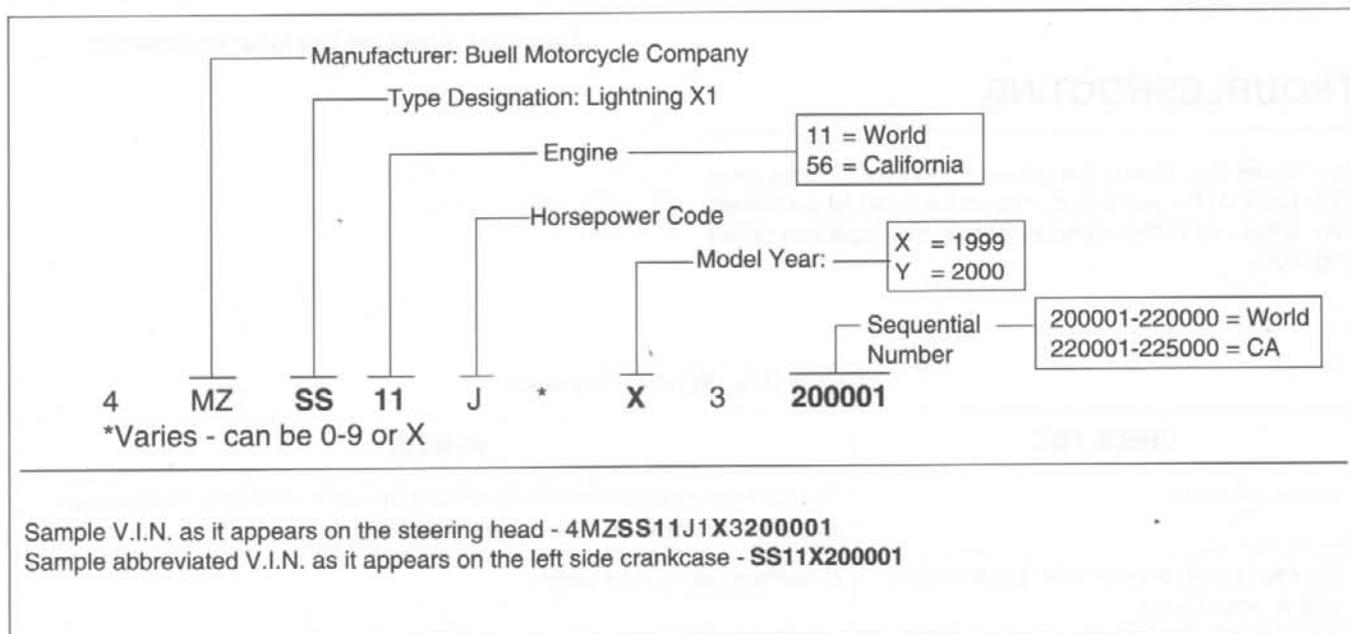


Figure 2-3. Vehicle Identification Number (V.I.N.)

## GENERAL

Good handling and maximum tire mileage are directly related to the care of wheels and tires. Regularly inspect wheels and tires for damage and wear. If handling problems occur, see 1.27 TROUBLESHOOTING or Table 2-3.

See 1.11 TIRES AND WHEELS for tire pressures. Keep tires inflated to the recommended air pressure. Always balance the wheel after replacing a tire.

### WARNING

Do not inflate any tire beyond its maximum inflation pressure as specified on tire sidewall. Overinflation may cause tire to suddenly deflate which could result in death or serious injury.

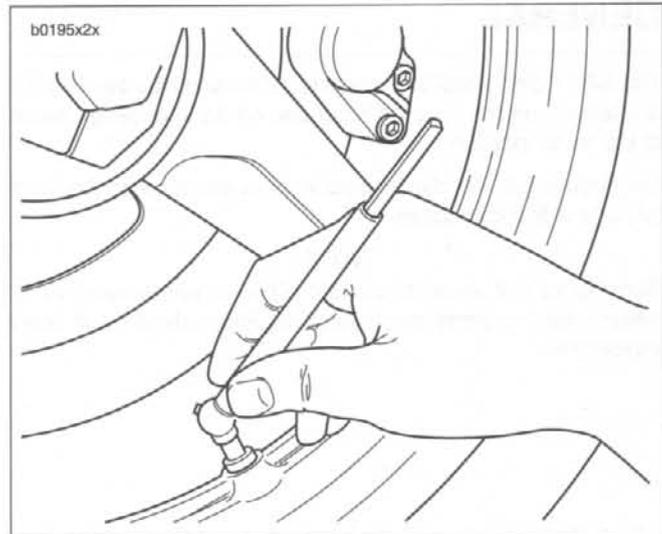


Figure 2-4. Checking Tire Inflation Pressure

## TROUBLESHOOTING

See Figure 2-4. Check tire inflation pressure at least once each week. At the same time, inspect tire tread for punctures, cuts, breaks and other damage. Repeat the inspection before long trips.

Table 2-3. Wheel Service

CHECK FOR	REMEDY
Loose axle nuts.	Tighten front axle nut (metric) to 48-53 ft-lbs (65.1-71.9 Nm). Tighten rear axle nut (metric) to 66-73 ft-lbs (89.5-98.9 Nm).
Excessive side-play or radial (up-and-down) play in wheel hubs.	Replace wheel hub bearings.
Alignment of rear wheel in frame or with front wheel.	Check Axle Alignment under 1.13 REAR BELT DEFLECTION or repair swingarm as described under 2.27 SWINGARM.
Rims and tires out-of-true sideways; should not be more than 0.080 in. (2.03 mm).	Replace rims. See 2.9 TIRES.
Rims and tires out-of-round or eccentric with hub; should not be more than 0.090 in. (2.29 mm).	Replace rims. See 2.9 TIRES.
Irregular or peaked front tire wear.	Replace as described under 2.5 FRONT WHEEL (1999 Models) or 2.6 FRONT WHEEL (2000 Models), 2.7 REAR WHEEL and 2.9 TIRES.
Correct tire inflation.	Inflate tires to correct pressure. See 1.11 TIRES AND WHEELS.
Correct tire and wheel balance.	Static balance may be satisfactory if dynamic balancing facilities are not available. However, dynamic balancing is strongly recommended.
Steering head bearings.	Correct adjustment and replace pitted or worn bearings. See 1.19 STEERING HEAD BEARINGS.
Damper tubes.	Check for leaks. See 2.24 FRONT FORK.
Shock absorbers.	Check damping action and mounts. See 1.17 SUSPENSION.
Swingarm bearings.	Check for looseness. See 2.27 SWINGARM.

**⚠ WARNING**

To prevent death or serious injury, use the following guidelines when installing a new tire or repairing a flat:

1. Always locate and eliminate the cause of the original tire failure.
2. Do not patch or vulcanize a tire casing. These procedures weaken the casing and increase the risk of a blowout.
3. The use of tires other than those specified can adversely affect handling which could result in death or serious injury.
4. Tires and wheels are critical items. Since the servicing of these components requires special tools and skills, Buell recommends that you see your dealer for these services.

**⚠ WARNING**

Buell recommends replacement of any tire punctured or damaged. In some cases small punctures in the tread area may be repaired from within the demounted tire by your Buell dealer. Speed should not exceed 50 mph (80 km/h) for the first 24 hours after repair and the repaired tire should NEVER be used over 80 mph (1340 km/h). In emergency situations, if a temporary repair is made, ride slowly with as light of a load as possible until the tire is permanently repaired or replaced. Failure to follow this warning could result in death or serious injury.

**⚠ WARNING**

Excessively worn tires adversely affect motorcycle traction, steering and handling and could result in death or serious injury.

At regular intervals of 5000 miles (8000 km) or whenever handling irregularities are noted, perform the recommended service checks. See Table 2-3.

If tires must be replaced, same as original equipment tires must be used. Other tires may not fit correctly and may be hazardous to use.

## REMOVAL

1. Raise front wheel off floor using procedure under 1.19 STEERING HEAD BEARINGS.
2. Detach front brake caliper from rotor. See 2.12 FRONT BRAKE CALIPER (1999 Models).

### NOTE

*Do not operate front brake lever with front wheel removed or caliper pistons may be forced out. Reseating pistons requires caliper disassembly.*

3. See Figure 2-5. Insert screwdriver/rod through hole in axle (1). Loosen front axle nut (4) (metric).
4. Loosen all four pinch screws (2) (metric).
5. Remove front axle nut (4) and washer (3). Pull front axle out of wheel hub while supporting front wheel.
6. See Figure 2-7. Remove spacer (3) from left side of wheel hub. Remove front wheel.

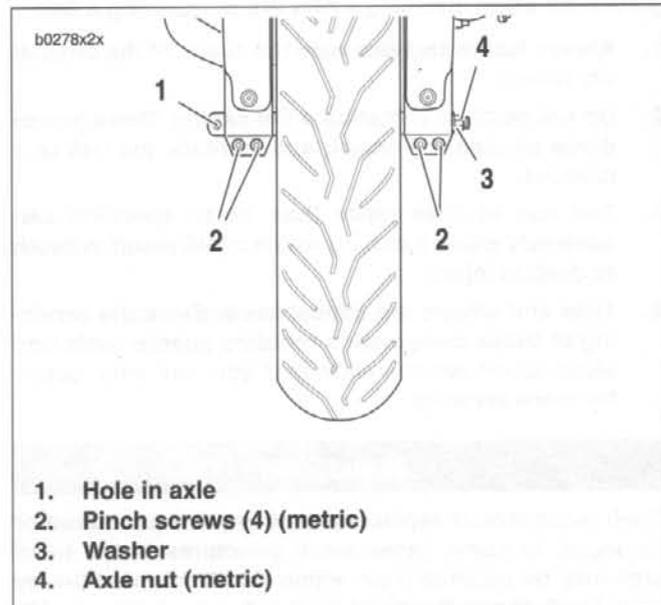


Figure 2-5. Front Wheel Mounting

## DISASSEMBLY

1. See Figure 2-7. Move wheel to bench area. On brake rotor side of wheel, remove right axle spacer (10).
2. Remove wheel bearings (4, 9) using BUSHING AND BEARING PULLER (Part No. HD-95760-69A) and 3/4 in. COLLET (Part No. HD-95767-69A).
3. To detach brake rotor (18) from front brake carrier (16), disassemble the six brake drive pins (20).
  - a. See Figure 2-6. Remove nut (1) and drive pin flat washer (2).
  - b. Remove flat washer (3) and wave washer (4). Discard wave washer. Inspect flat washer for damage and discard if necessary.
4. See Figure 2-7. Remove five screws (17) to detach front brake carrier (16) from wheel hub.
5. Remove tire. See 2.9 TIRES.

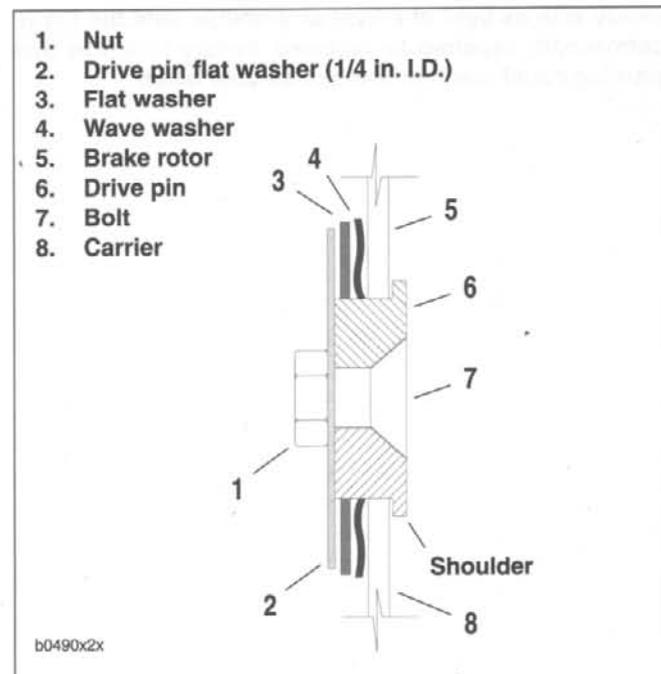


Figure 2-6. Rotor to Carrier Fastener

2. Inspect all parts for damage or excessive wear.

## CLEANING, INSPECTION AND REPAIR

### ⚠ WARNING

Never use compressed air to "spin-dry" bearings. Very high bearing speeds can damage unlubricated bearings. Spinning bearings with compressed air can also cause a bearing to fly apart, which could result in death or serious injury.

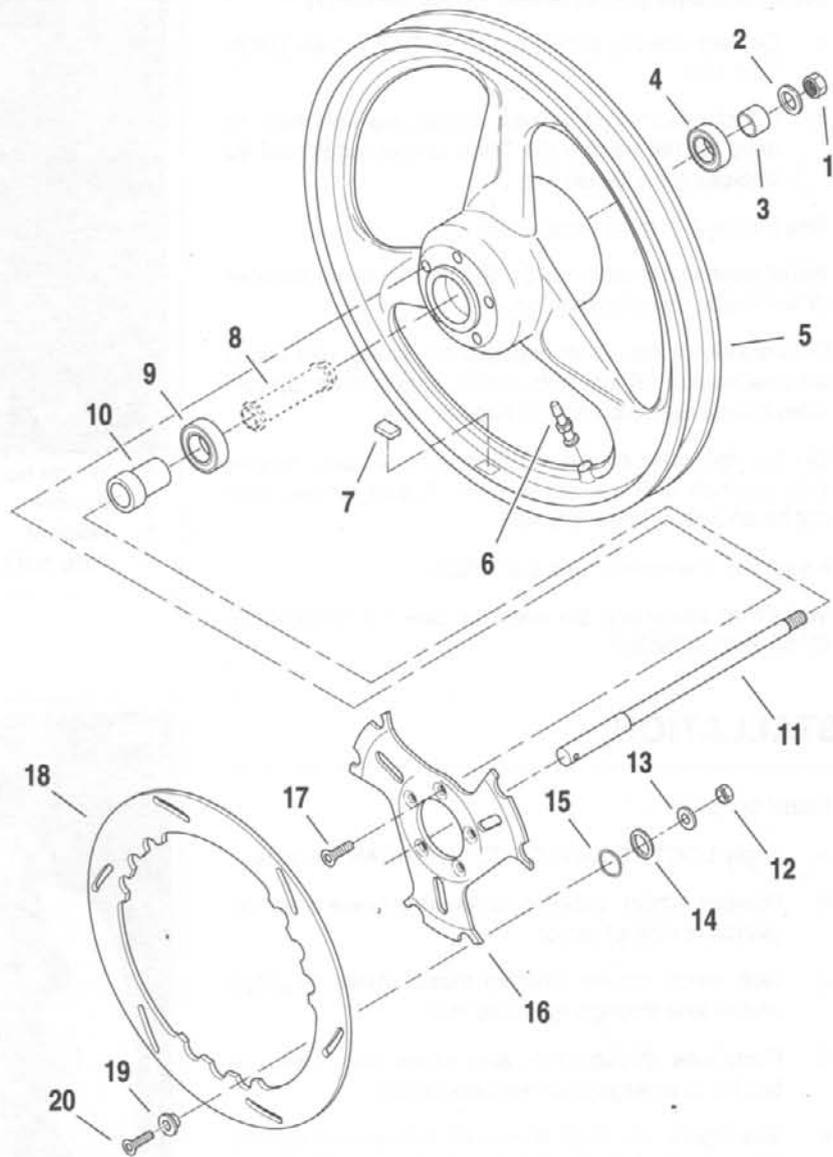
1. Thoroughly clean all parts in solvent.

### ⚠ WARNING

Always replace brake pads in complete sets for correct brake operation. Never replace just one brake pad. Failure to install brake pads as a set could result in death or serious injury.

3. Inspect brake rotor and pads. See 1.8 BRAKE PADS AND ROTORS (1999 MODELS).

1. Nut (metric)
2. Washer
3. Left axle spacer
4. Wheel bearing
5. Wheel
6. Valve stem
7. Wheel weight
8. Spacer
9. Wheel bearing
10. Right axle spacer
11. Front axle
12. Locknut (6)
13. Flat washer (6)
14. Washer (6)
15. Wave washer (6)
16. Front brake carrier
17. Screw (5)
18. Front brake rotor
19. Brake drive pin (6)
20. Screw (6)



b0701x2x

Figure 2-7. Front Wheel

## ASSEMBLY

### WARNING

Do not allow brake fluid, bearing grease, lubricants, etc. to contact brake rotor or reduced braking ability will occur, which could result in death or serious injury.

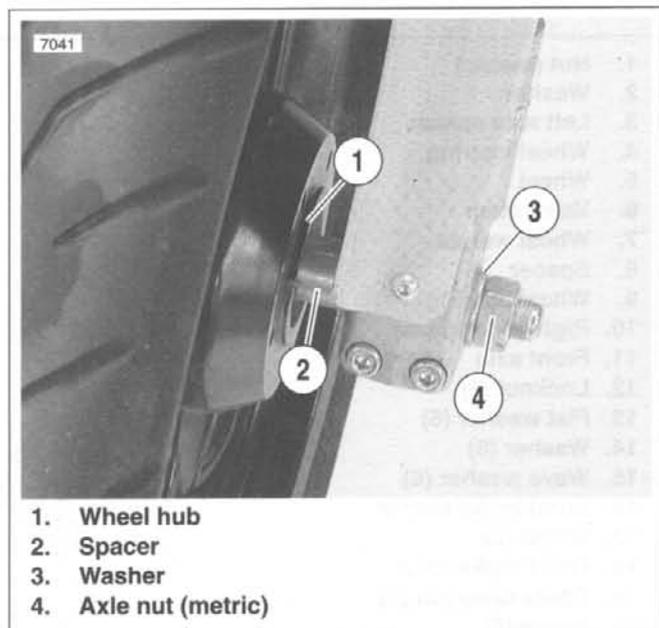
1. See Figure 2-7. Install front brake carrier (16) on right side of wheel. Slots in carrier must line up with wheel spokes.
  - a. Verify that the front brake carrier is thoroughly clean.
  - b. Apply LOCTITE THREADLOCKER 272 (red) to each of the five screws (17).
  - c. Install carrier (16) on wheel hub using screws. Tighten to 20-22 ft-lbs (27.1-29.8 Nm).

2. Attach front brake rotor (18) to carrier. Sweep of slots in rotor must be in the same direction as slots in carrier.
  - a. See Figure 2-6. Place drive pin (6) between rotor and carrier. Shoulder on drive pin faces away from wheel hub.
  - b. Insert bolt (7) through drive pin (6).
  - c. Install **new** wave washer (4) on back side of rotor.
  - d. Install flat washer (3).
  - e. Install drive pin flat washer (2).

### NOTE

Updated drive pins were introduced midway through the 1999 model year. Measure outside diameter of drive pin before installation. If diameter is 1.0 in. (25.4 mm), replace with part number 45164-96YA.

3. Check that flat washer (3) has not fallen between drive pin (6) and drive pin flat washer (2). Install nut (1).
  - a. On cast wheels, torque nut (1) to 7.5-10 ft-lbs (10.2-13.6 Nm).
  - b. On aluminum P/M wheels, tighten nut until flush to drive pin flat washer (2). Then turn an additional 60 degrees (one flat on nut).
4. See Figure 2-7. Install spacer (8).
5. Install **new** wheel bearings (4, 9) into hub using suitable driver. Press on outer race only.
6. On the side of the wheel opposite the brake rotor insert left axle spacer (3) into hub until it seats in bore. Spacer sleeve must not be cocked or tilted in bore.
7. On the right side of the wheel insert right axle spacer (10) into hub until it seats in bore. Spacer sleeve must not be cocked or tilted in bore.
8. Install tire, if removed. See 2.9 TIRES.
9. Verify that wheel and tire are true. See 2.8 CHECKING CAST RIM RUNOUT.

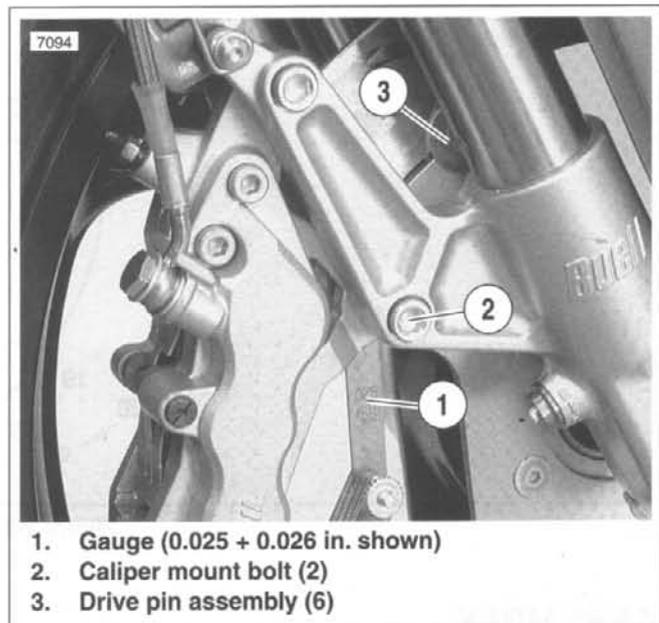


1. Wheel hub
2. Spacer
3. Washer
4. Axle nut (metric)

Figure 2-8. Spacer

## INSTALLATION

1. Install front axle.
  - a. Apply LOCTITE ANTI-SEIZE LUBRICANT to axle.
  - b. Position wheel between forks with brake rotor on gearcase side of motor.
  - c. With pinch screws (metric) loose, insert threaded end of axle through right side fork.
  - d. Push axle through fork and wheel hub until axle begins to emerge from left side of hub.
  - e. See Figure 2-8. Align spacer (2) between wheel hub and fork. Push axle through spacer and left fork leg.
2. Compress the front suspension to make sure it is free and not binding.
3. Install axle nut (4).
  - a. Apply LOCTITE THREADLOCKER 243 (blue) to axle threads.
  - b. Install washer (3) and axle nut (4) (metric) over threaded end of axle.
  - c. See Figure 2-5. Insert screwdriver or steel rod through hole (1) in axle.
  - d. While holding axle stationary, tighten axle nut (4) (metric) to 48-53 ft-lbs (65.1-71.9 Nm).



1. Gauge (0.025 + 0.026 in. shown)
2. Caliper mount bolt (2)
3. Drive pin assembly (6)

Figure 2-9. Checking Drive Pins

4. Tighten the four front axle pinch screws (2) (metric) to 13-15 ft-lbs (17.6-20.3 Nm).
5. Install front brake caliper. See 2.12 FRONT BRAKE CALIPER (1999 Models).
6. See Figure 2-9. Inspect each drive pin assembly. There must be a minimum clearance of 0.050 in. (1.27 mm) between drive pin assembly and caliper mount bolts.

## MODEL YEAR CHANGE

All 2000 Model Year Buell motorcycles have a new one-piece riveted brake disc/carrier assembly.

## REMOVAL

1. Raise front wheel off floor using procedure under 1.19 STEERING HEAD BEARINGS.
2. Detach front brake caliper from rotor. See 2.19 FRONT BRAKE CALIPER (2000 Models).

### NOTE

*Do not operate front brake lever with front wheel removed or caliper pistons may be forced out. Reseating pistons requires caliper disassembly.*

3. See Figure 2-10. Insert screwdriver/rod through hole in axle (1). Loosen front axle nut (4) (metric).
4. Loosen all four pinch screws (2) (metric).
5. Remove front axle nut (4) and washer (3). Pull front axle out of wheel hub while supporting front wheel.
6. See Figure 2-11. Remove spacer (3) from left side of wheel hub. Remove front wheel.

## DISASSEMBLY

1. See Figure 2-11. Move wheel to bench area. On brake rotor side of wheel, remove right axle spacer (10).
2. Remove wheel bearings (4, 9) using BUSHING AND BEARING PULLER (Part No. HD-95760-69A) and 3/4 in. COLLET (Part No. HD-95767-69A).
3. See Figure 2-10. Remove five T-40 TORX screws (12) to detach front brake rotor (13) from wheel hub. Discard T-40 TORX screws.
4. Remove tire. See 2.9 TIRES.

## CLEANING AND INSPECTION

### WARNING

Never use compressed air to "spin-dry" bearings. Very high bearing speeds can damage unlubricated bearings. Spinning bearings with compressed air can also cause a bearing to fly apart, which could result in death or serious injury.

1. Thoroughly clean all parts in solvent.
2. Inspect all parts for damage or excessive wear.

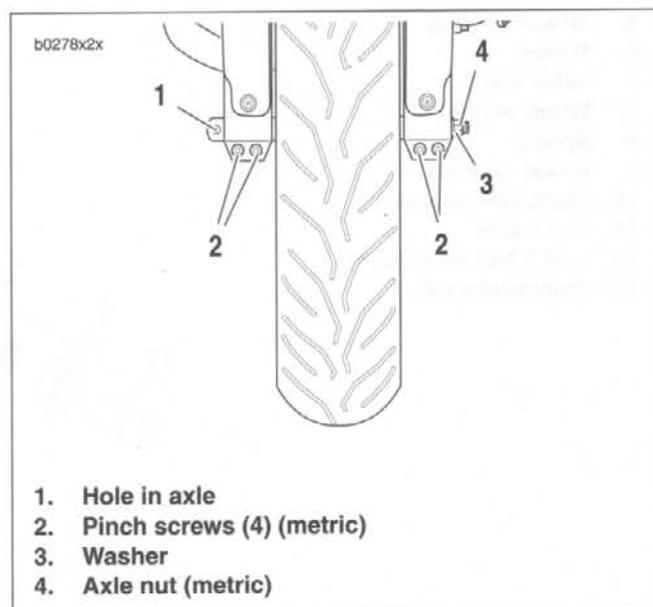


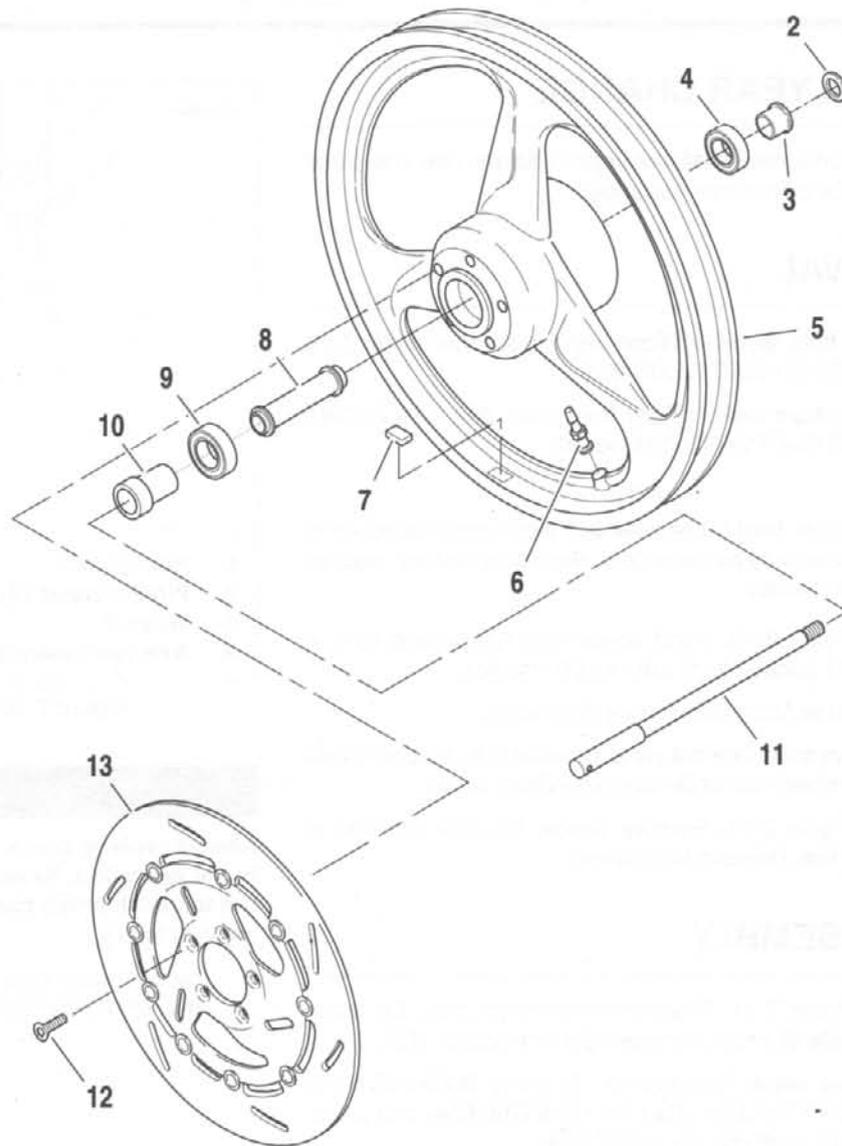
Figure 2-10. Front Wheel Mounting

### WARNING

Always replace brake pads in complete sets for correct brake operation. Never replace just one brake pad. Failure to install brake pads as a set could result in death or serious injury.

3. Inspect brake rotor and pads. See 1.10 BRAKE PADS AND ROTORS (2000 MODELS).

1. Nut (metric)
2. Washer
3. Left axle spacer
4. Wheel bearing
5. Wheel
6. Valve stem
7. Wheel weight
8. Spacer
9. Wheel bearing
10. Right axle spacer
11. Front axle
12. T-40 TORX Screws (5)
13. Front brake rotor



b0701a2x

Figure 2-11. Front Wheel

## ASSEMBLY

1. See Figure 2-11. Install spacer (8).
2. Install **new** wheel bearings (4, 9) into hub using suitable driver. Press on outer race only.
3. On the side of the wheel opposite the brake rotor insert left axle spacer (3) into hub until it seats in bore. Spacer sleeve must not be cocked or tilted in bore.
4. On the right side of the wheel insert right axle spacer (10) into hub until it seats in bore. Spacer sleeve must not be cocked or tilted in bore.
5. Install tire, if removed. See 2.9 TIRES.
6. Verify that wheel and tire are true. See 2.8 CHECKING CAST RIM RUNOUT.
7. Balance tire. See 2.9 TIRES, Adjustment.

## WARNING

**Do not allow brake fluid, bearing grease, lubricants, etc. to contact brake rotor or reduced braking ability will occur, which could result in death or serious injury.**

8. See Figure 2-11. Install front brake rotor (13) on right side of wheel. Slots in carrier must line up with wheel spokes.
  - a. Verify that the front brake carrier is thoroughly clean.
  - b. Apply LOCTITE THREADLOCKER 243 (blue) to threads of **new** T-40 TORX screws (12).
  - c. Install rotor (13) on wheel hub using five **new** T-40 TORX screws (12). Tighten TORX screws in criss-cross pattern to 20-22 ft-lbs (27.1-29.8 Nm).

## INSTALLATION

1. Install front axle.
  - a. Apply LOCTITE ANTI-SEIZE LUBRICANT to axle.
  - b. Position wheel between forks with brake rotor on gearcase side of motor.
  - c. With pinch screws (metric) loose, insert threaded end of axle through right side fork.
  - d. Push axle through fork and wheel hub until axle begins to emerge from left side of hub.
  - e. See Figure 2-12. Align spacer (2) between wheel hub and fork. Push axle through spacer and left fork leg.
2. Compress the front suspension to make sure it is free and not binding.
3. Install axle nut (4).
  - a. Apply LOCTITE THREADLOCKER 243 (blue) to axle threads.
  - b. Install washer (3) and axle nut (4) (metric) over threaded end of axle.
  - c. See Figure 2-10. Insert screwdriver or steel rod through hole (1) in axle.
  - d. While holding axle stationary, tighten axle nut (4) (metric) to 48-53 ft-lbs (65.1-71.9 Nm).
4. Tighten the four front axle pinch screws (2) (metric) to 13-15 ft-lbs (17.6-20.3 Nm).
5. Install front brake caliper. See 2.19 FRONT BRAKE CALIPER (2000 Models).

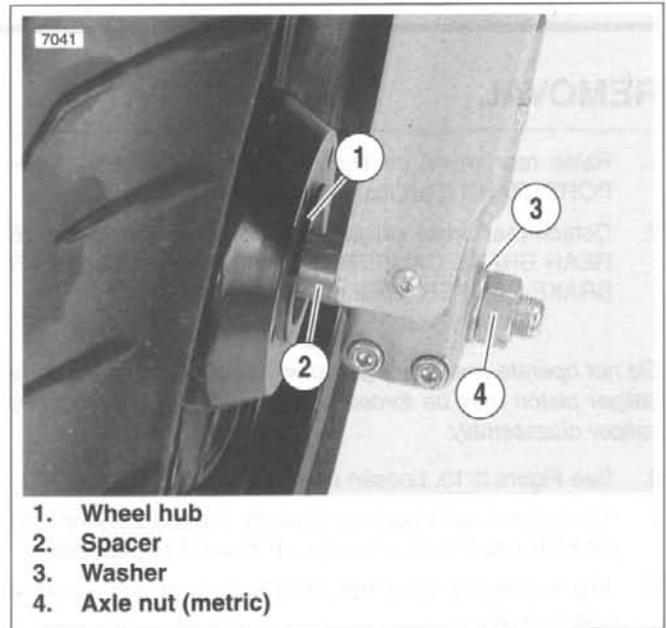


Figure 2-12. Spacer

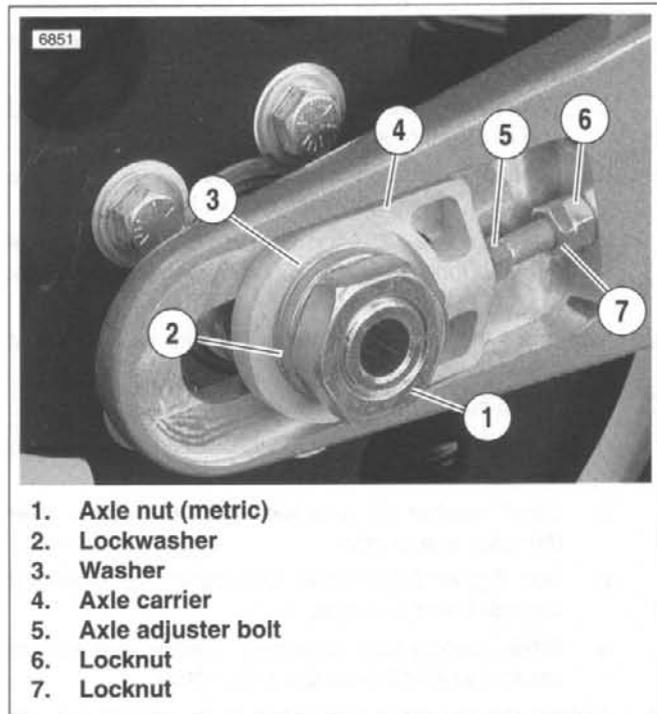
## REMOVAL

1. Raise rear wheel off floor using REAR WHEEL SUPPORT STAND (Part No. B-41174).
2. Detach rear brake caliper from caliper mount. See 2.15 REAR BRAKE CALIPER (1999 models) or 2.22 REAR BRAKE CALIPER (2000 models).

**NOTE**

*Do not operate rear brake pedal with rear wheel removed or caliper piston may be forced out. Reseating piston requires caliper disassembly.*

3. See Figure 2-13. Loosen rear axle nut (1) (metric).
4. Loosen rear axle adjuster locknuts (7) and adjusters (5) on both sides. Push wheel as far forward as possible.
5. Slip secondary drive belt from bottom of belt sprocket and remove.
6. Remove rear axle nut (1) (metric), lockwasher (2), washer (3) and axle carrier (4).
7. See Figure 2-14. Pull axle (3) and washer (4) out from left side and remove wheel. Support caliper mount from frame.



1. Axle nut (metric)
2. Lockwasher
3. Washer
4. Axle carrier
5. Axle adjuster bolt
6. Locknut
7. Locknut

Figure 2-13. Rear Wheel Mounting, Right Side

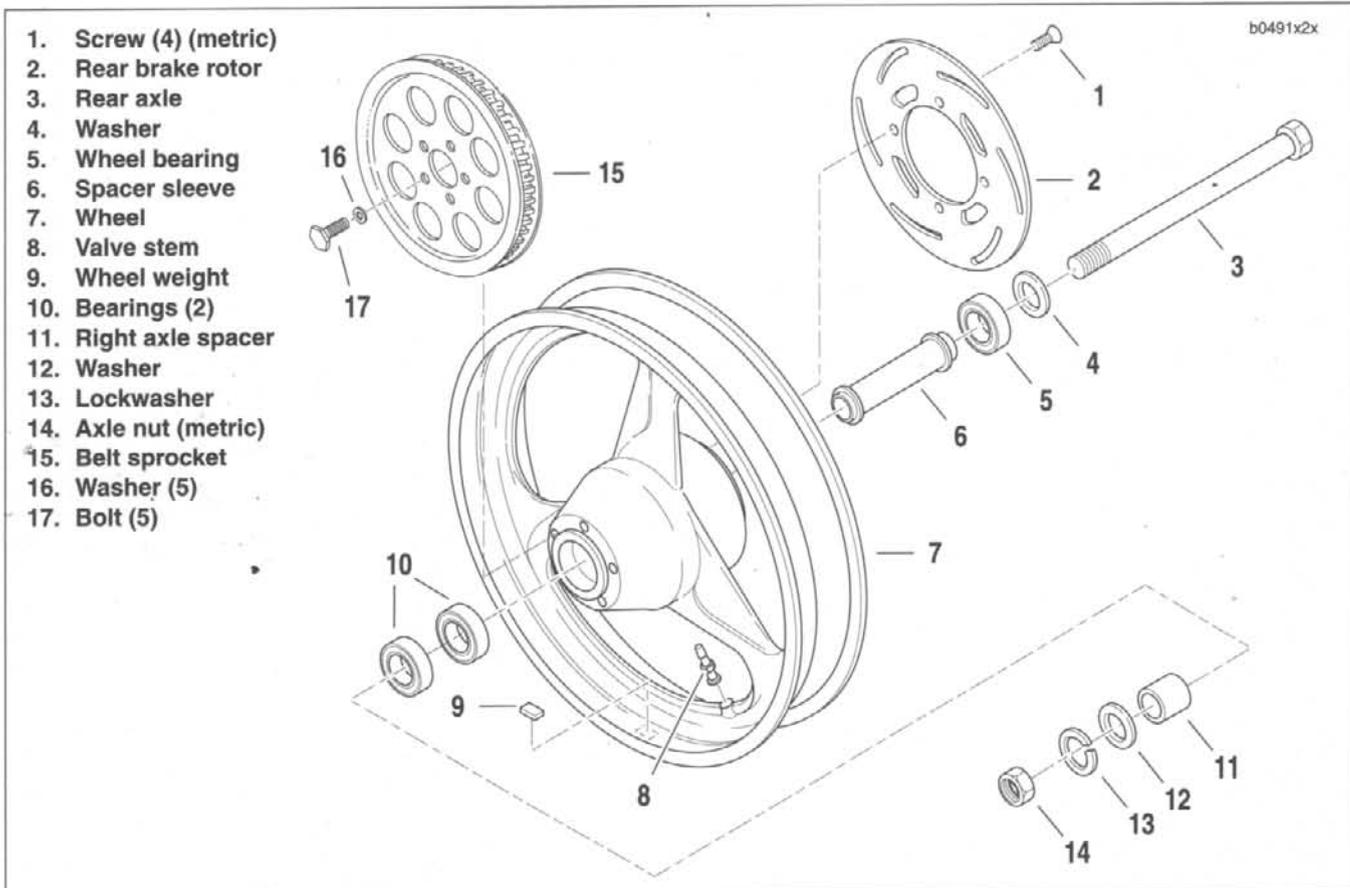


Figure 2-14. Rear Wheel

## DISASSEMBLY

1. See Figure 2-15. Move wheel to bench area. On the brake rotor side of the wheel, remove bearing using BUSHING AND BEARING PULLER (Part No. HD-95760-69A) and 1 1/8 in. COLLET (Part No. HD-95769-69).
2. See Figure 2-14. Remove two bearings (10) from sprocket side of wheel.
3. Remove four screws (1) (metric) to detach rear brake rotor (2) from wheel hub. On vehicles with P/M wheels, remove nut from each screw.
4. Remove five bolts (17) and washers (16) to detach belt sprocket (15) from wheel hub.

## CLEANING, INSPECTION AND REPAIR

### WARNING

Never use compressed air to “spin-dry” bearings. Very high bearing speeds can damage unlubricated bearings. Spinning bearings with compressed air can also cause a bearing to fly apart, which could result in death or serious injury.

1. Thoroughly clean all parts in solvent.
2. Inspect all parts for damage or excessive wear.

### WARNING

Always replace brake pads in complete sets for correct brake operation. Never replace just one brake pad. Failure to install brake pads as a set could result in death or serious injury.

3. Inspect brake rotor. See 1.8 BRAKE PADS AND ROTORS (1999 MODELS) or 1.10 BRAKE PADS AND ROTORS (2000 MODELS).

## ASSEMBLY

### WARNING

Do not allow brake fluid, bearing grease, lubricants, etc. to contact brake rotor or reduced braking ability will occur. These events could result in death or serious injury.

1. See Figure 2-14. Install rear brake rotor (2) on side of wheel hub with room for a single wheel bearing. Place rotor surface listing minimum thickness specification away from wheel hub.
  - a. Verify that rear brake rotor is thoroughly clean.
  - b. Apply LOCTITE THREADLOCKER 272 (red) to each of the four screws (1) (metric).
  - c. Fasten rotor to wheel hub using screws. Tighten to 35-40 ft-lbs (47.5-54.2 Nm).



Figure 2-15. Removing Wheel Bearing

2. Install belt sprocket (15) on side of wheel hub with room for two wheel bearings. Place sprocket machined surface away from wheel hub.
  - a. Check sprocket for unusual wear, broken teeth or a damaged flange. Replace if necessary.
  - b. Apply LOCTITE THREADLOCKER 272 (red) to each of the five sprocket bolts (17).
  - c. Install belt sprocket (15) using bolts (17) and washers (16). Tighten to 55-65 ft-lbs (74.6-88.1 Nm).
3. Install bearings (5, 10) and spacer (6) into wheel hub.
  - a. On the belt sprocket side of the wheel, install two bearings (10). Insert bearings separately, pressing on outer race only. Fully seated bearings will touch shoulder for spacer sleeve.
  - b. Insert spacer sleeve (6) into wheel hub.
  - c. On the brake rotor side of the wheel, insert bearing (5) into wheel hub until it contacts end of spacer sleeve. Press on outer race only.
4. Verify that wheel is true. See 2.8 CHECKING CAST RIM RUNOUT.
5. Install tire if removed. Under all circumstances, check that wheel and tire are true. See 2.9 TIRES.

## INSTALLATION

1. Place wheel centrally in the swingarm with the brake rotor in the caliper. Slide wheel far enough forward to slip belt over sprocket and then slide wheel back.
2. Install rear axle.
  - a. Apply LOCTITE ANTI-SEIZE LUBRICANT to axle.

- b. See Figure 2-16. Insert axle (1) through washer (2) so that rounded side of washer will face swingarm. Continue through axle carrier (3), left side of swingarm (4), rear brake caliper mount (5) and wheel assembly.
  - c. See Figure 2-17. Place spacer (7) between wheel hub and right side of swingarm (6). Slide axle (1) through spacer, swingarm and axle carrier (5).
  - d. Place washer (4) on axle with rounded side facing swingarm. Install lockwasher (3) and axle nut (2) (metric). Do not fully tighten rear axle nut at this time.
3. Attach rear brake caliper to caliper mount. See 2.15 REAR BRAKE CALIPER (1999 models).
  4. Check for proper belt tension and wheel alignment. See 1.13 REAR BELT DEFLECTION.
  5. Tighten rear axle nut (14) (metric) to 66-73 ft-lbs (89.5-98.9 Nm).

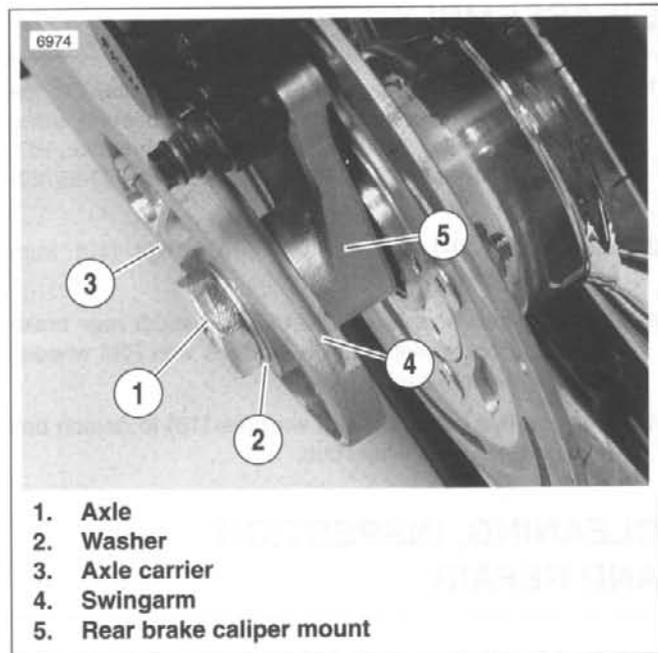


Figure 2-16. Axle, Left Side

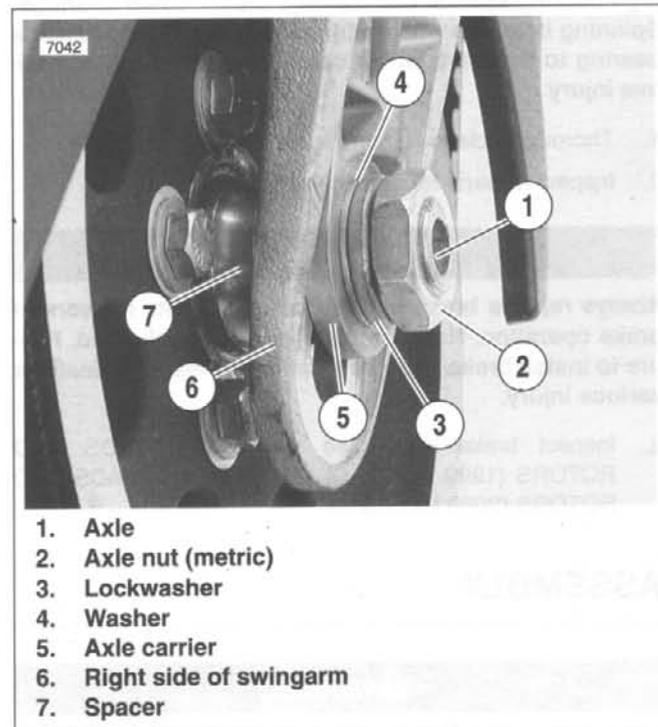


Figure 2-17. Axle, Right Side

## GENERAL

Check wheels for lateral and radial runout before installing a new tire.

### Rim Lateral Runout

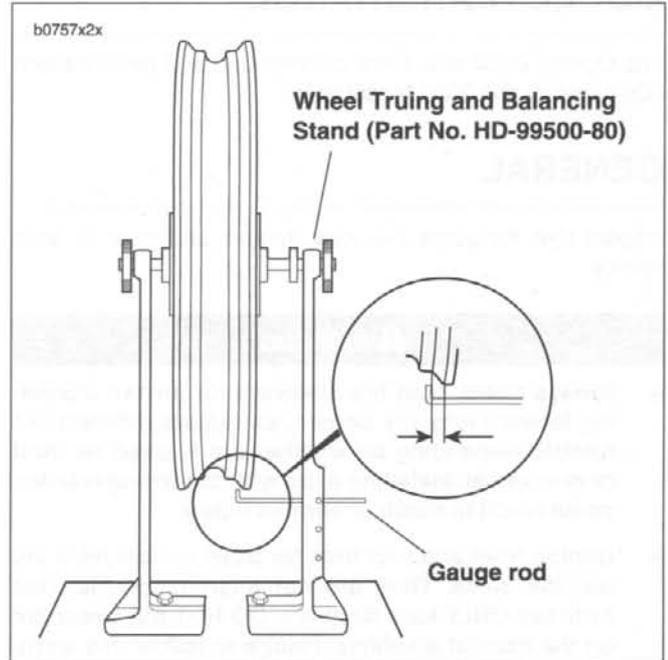
1. See Figure 2-18. Install truing arbor in wheel hub and place wheel in WHEEL TRUING AND BALANCING STAND (Part No. HD-99500-80).
2. Tighten arbor nuts so hub will turn on its bearings.
3. Check rim lateral runout by placing a gauge rod or dial indicator near the rim bead. Replace wheel if lateral runout exceeds specification shown in Table 2-4.

### Rim Radial Runout

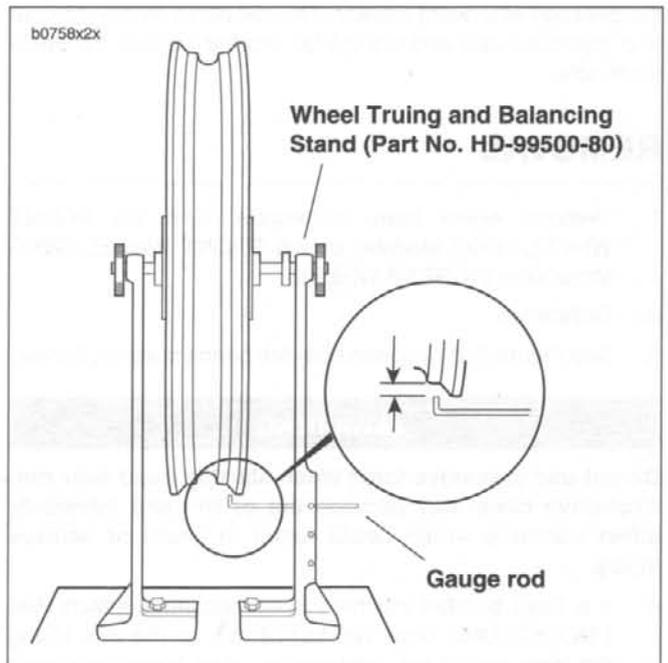
1. See Figure 2-19. Install truing arbor in wheel hub and place wheel in WHEEL TRUING AND BALANCING STAND (Part No. HD-99500-80).
2. Tighten arbor nuts so hub will turn on its bearings.
3. Check radial runout as shown. Replace wheel if runout exceeds specification shown in Table 2-4.

**Table 2-4. Wheel Runout**

WHEEL TYPE	MAXIMUM LATERAL RUNOUT	MAXIMUM RADIAL RUNOUT
Cast	0.040 in. (1.02 mm)	0.030 in. (0.76 mm)
Aluminum P/M	0.020 in. (0.51 mm)	0.020 in. (0.51 mm)



**Figure 2-18. Checking Cast Rim Lateral Runout**



**Figure 2-19. Checking Cast Rim Radial Runout**

## MODEL YEAR CHANGE

The Dunlop D204 tires were discontinued and replaced with D207 tires for the 2000 Model Year.

## GENERAL

Inspect tires for punctures, cuts, breaks and wear at least weekly.

### ⚠ WARNING

- Always check both tire sidewalls for arrows indicating forward rotation. Some tires require different tire rotation depending on whether tire is used on front or rear wheel. Installing a tire with the wrong rotation could result in death or serious injury.
- Dunlop front and rear tires for Buell motorcycles are not the same. They are not interchangeable. Use front tire **ONLY** for a front tire. **DO NOT** put a rear tire on the front of a vehicle. Failure to follow this warning could result in death or serious injury.

Some tires have arrows molded into the tire sidewall. These tires should be mounted on the rim with the arrow pointing in the direction of forward rotation. The red circle on the sidewall is a balance mark and should be located next to the valve stem hole.

## REMOVAL

1. Remove wheel from motorcycle. See 2.5 FRONT WHEEL (1999 Models) or 2.6 FRONT WHEEL (2000 Models) or 2.7 REAR WHEEL.
2. Deflate tire.
3. See Figure 2-20. Loosen both tire beads from rim flange.

### ⚠ WARNING

Do not use excessive force when starting bead over rim. Excessive force may damage tire or rim and adversely affect handling which could result in death or serious injury.

4. If a bead breaker machine is not available, attach RIM PROTECTORS (Part No. HD-01289) to the rim. Using tire tools (not sharp instruments), start upper bead over edge of rim at valve. Repeat all around rim until first bead is over rim.
5. See Figure 2-21. Push lower bead into rim well on one side and insert tire tool underneath bead from opposite side. Pry bead over rim edge. Remove tire from rim.
6. Remove valve stem if it is damaged or leaks.
7. Mount tire on TIRE SPREADER (Part No. HD-21000) for inspection and repair procedures.

## CLEANING AND INSPECTION

1. Clean inside of tire.

2. If rim is dirty or corroded, clean with a stiff wire brush.
3. Inspect tire for wear and damage. Replace worn or damaged tires.

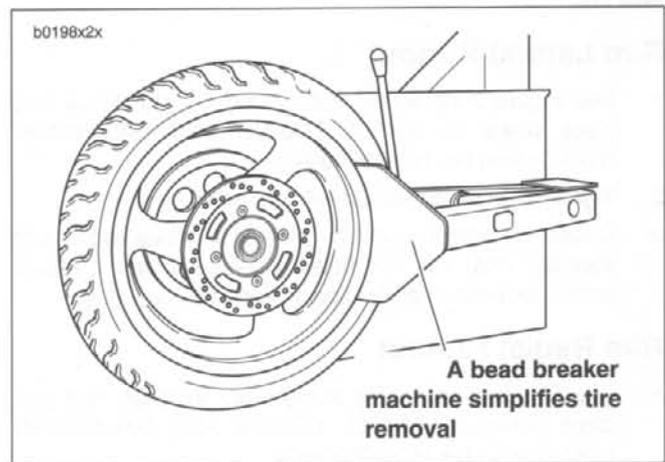


Figure 2-20. Loosening Beads from Rim Flange

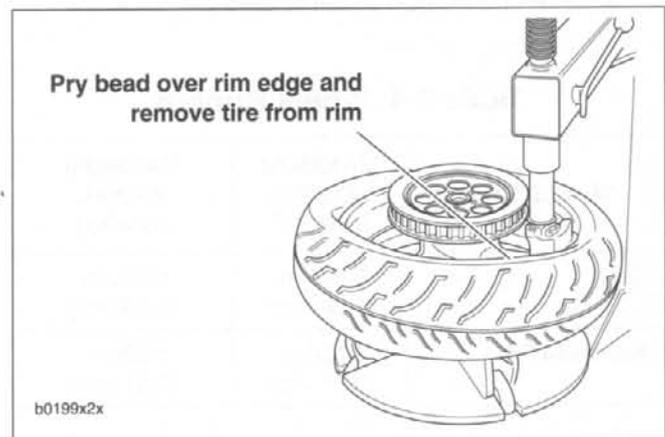


Figure 2-21. Starting Tire Off Rim

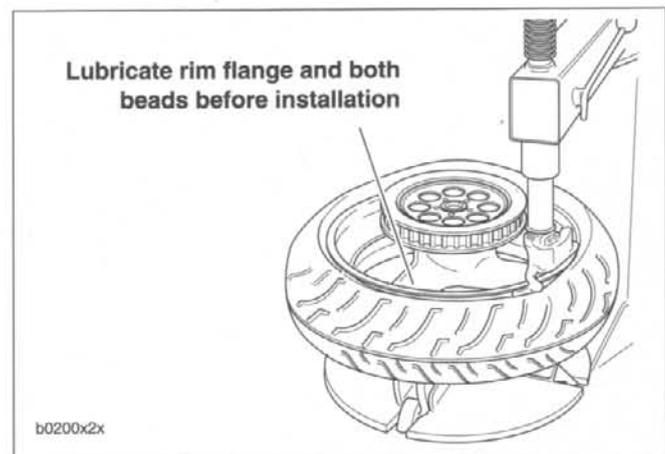


Figure 2-22. Starting Bead on Rim

## INSTALLATION

### **WARNING**

- Only install original equipment (stock) tire valves and valve caps. A valve or valve and cap combination that is too long may interfere with (strike) adjacent components, damage the valve and cause rapid tire deflation. Rapid tire deflation could cause loss of control. These events could result in death or serious injury.
- Also, aftermarket valve caps that are heavier than the stock cap may have clearance at slow speeds; but, at high speed the valve/cap will be moved outward by centrifugal force. This outward movement could cause the valve/cap to strike the adjacent components, damage the valve and cause rapid tire deflation. Rapid tire deflation could cause loss of control. These events could result in death or serious injury.

1. Damaged or leaking valve stems must be replaced. Place rubber grommet on valve stem with shoulder in recess of the valve stem head.
2. Install and tighten nut to 42-44 **in-lbs** (4.7-5.0 Nm).
3. Thoroughly lubricate rim flanges and both beads of tire with tire lubricant.
4. See Figure 2-22. Starting at the valve stem, start first bead into the rim well using a bead breaker machine. If no machine is available, work bead on as far as possible by hand. Use a tire tool to pry the remaining bead over rim flange.
5. Start 180° from valve stem hole and place second bead on rim. Work bead onto rim with tire tools, working toward valve in both directions.

### **WARNING**

Do not inflate over 40 psi (275 kPa) to seat the beads. Inflating the tire beyond 40 psi (275 kPa) to seat the beads can cause the tire rim assembly to burst with force sufficient to cause death or serious injury. If the beads fail to seat to 40 psi (275 kPa), deflate and relubricate the bead and rim and reinflate to seat the beads, but do not exceed 40 psi (275 kPa).

6. Apply air to stem to seat beads on rim. It may be necessary to use a TIRE BEAD EXPANDER (Part No. HD-28700) on the tire until beads seal on rim.

### Checking Tire Lateral Runout

1. See Figure 2-23. Turn wheel on axle and measure amount of displacement from a fixed point to tire sidewall.
2. Tire tread lateral runout should be no more than 0.080 in. (2.03 mm). If runout is more than 0.080 in. (2.03 mm), remove tire from rim.
3. Check rim bead side runout. See 2.8 CHECKING CAST RIM RUNOUT. Replace rims not meeting specifications.
4. Install tire and check again for tire tread lateral runout.

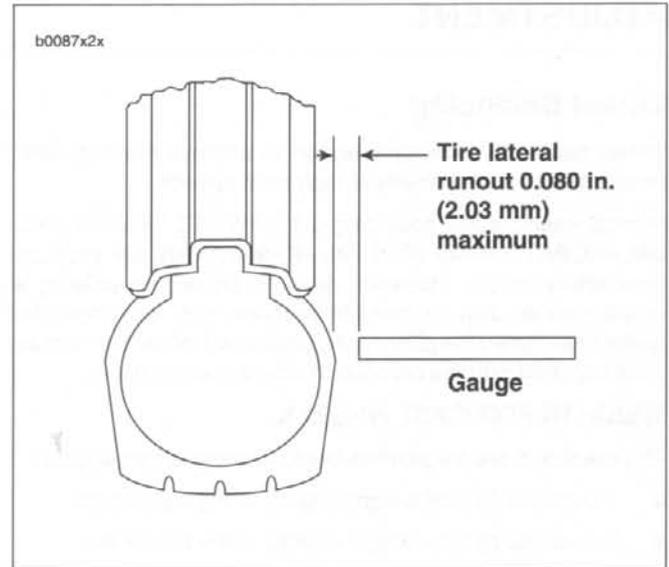


Figure 2-23. Checking Tire Lateral Runout

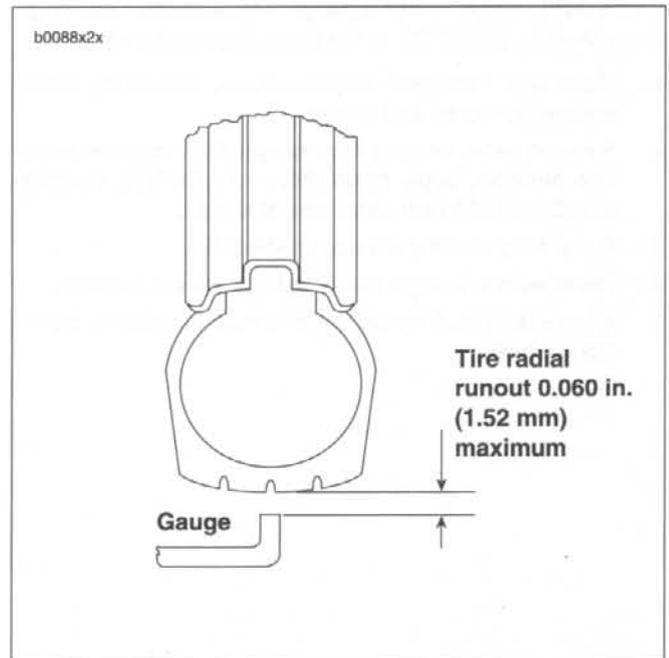


Figure 2-24. Checking Tire Radial Runout

### Checking Tire Radial Runout

1. See Figure 2-24. Turn wheel on axle and measure tread radial runout.
2. Tire tread radial runout should not be greater than 0.060 in. (1.52 mm). If runout exceeds specification, remove tire from rim.
3. Check rim bead runout. See 2.8 CHECKING CAST RIM RUNOUT. Replace rims not meeting specifications.
4. Install tire and check tire tread radial runout again.

## ADJUSTMENT

### Wheel Balancing

Wheel balancing is recommended to improve handling and reduce vibration, especially at high road speeds.

In most cases, static balancing using WHEEL TRUING AND BALANCING STAND (Part No. HD-99500-80) will produce satisfactory results. However, dynamic balancing, utilizing a wheel spinner, can be used to produce finer tolerances for better high-speed handling characteristics. Follow the instructions supplied with the balance machine you are using.

#### WEIGHTS FOR CAST WHEELS

The maximum weight permissible to accomplish balance is:

- 1.0 oz. (28 g) total weight applied to the front wheel.
- 2.0 oz. (56 g) total weight applied to the rear wheel.

Wheels should be balanced to within 1/4 oz. (7 g) at 60 MPH (97 KM/H).

See Figure 2-25. Use only WHEEL WEIGHTS (Part No. 43692-94Y) which have special self-adhesive backings. Apply WHEEL WEIGHTS to the flat surface of the wheel rim.

1. Make sure that area of application is completely clean, dry and free of oil and grease.
2. Remove paper backing from weight. For additional adhesive strength, apply three drops of LOCTITE SUPER-BONDER 420 to adhesive side of weight.
3. Place weight on flat surface of wheel rim.
4. Press weight firmly in place and hold for ten seconds.
5. Allow eight hours for adhesive to cure completely before using wheel.

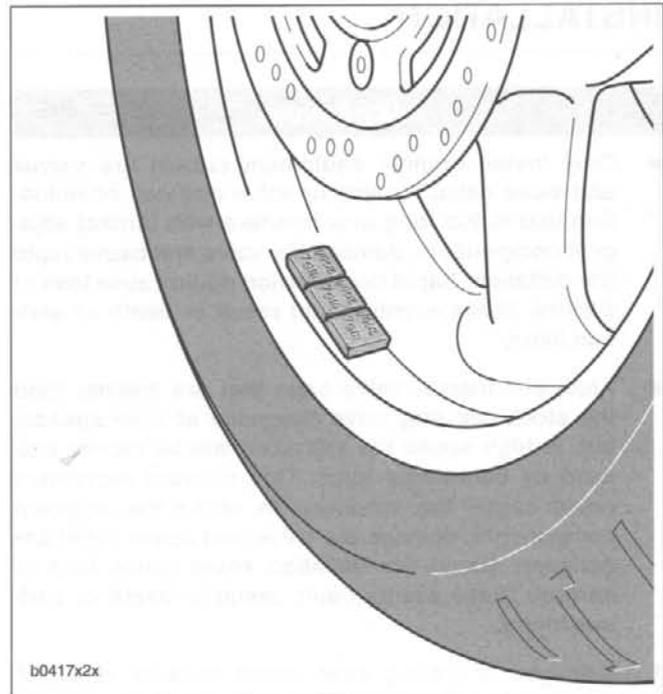


Figure 2-25. Wheel Weights

## GENERAL

The front and rear brakes are fully hydraulic disc brake systems that require little maintenance. The front brake master cylinder is an integral part of the brake hand lever assembly. The rear brake master cylinder is located on the right side of the motorcycle near the brake pedal.

Check the master cylinder reservoirs for proper fluid levels after the first 500 miles (800 km) and every 5000 miles (8000 km) thereafter. Also inspect fluid levels at the end of every riding season. See 1.7 BRAKES (1999 Models).

Check brake pads and rotors for wear at every service interval. See 1.8 BRAKE PADS AND ROTORS (1999 MODELS).

If determining probable causes of poor brake operation, see Table 2-5.

### WARNING

- Clean brake system components using denatured alcohol. Do not use mineral-base cleaning solvents, such as gasoline or paint thinner. Use of mineral-base solvents causes deterioration of rubber parts that continues after assembly. This may result in improper brake operation which could result in death or serious injury.
- Always test motorcycle brakes at low speed after servicing or bleeding system. To prevent death or serious injury, Buell recommends that all brake repairs be performed by a Buell dealer or other qualified mechanic.

### CAUTION

D.O.T. 5 brake fluid can cause irritation of eyes and skin. In case of contact with skin or eyes, flush with plenty of water. Get medical attention for eyes. **KEEP BRAKE FLUID OUT OF THE REACH OF CHILDREN.** Failure to comply may result in mild or moderate injury.

**Table 2-5. Brake Troubleshooting**

CONDITION	CHECK FOR	REMEDY
Excessive lever/pedal travel or spongy feel.	Air in system. Master cylinder low on fluid.	Bleed brake(s). Fill master cylinder with approved brake fluid.
Chattering sound when brake is applied.	Worn pads. Loose mounting bolts. Warped rotor.	Replace brake pads. Tighten bolts. Replace rotor.
Ineffective brake – lever/pedal travels to limit.	Low fluid level. Piston cup not functioning.	Fill master cylinder with approved brake fluid, and bleed system. Rebuild cylinder.
Ineffective brake – lever/pedal travel normal.	Distorted or glazed rotor. Distorted, glazed or contaminated brake pads.	Replace rotor. Replace pads.
Brake pads drag on rotor – will not retract.	Cup in master cylinder not uncovering relief port. Rear brake pedal linkage out of adjustment.	Inspect master cylinder. Adjust linkage.

# FRONT BRAKE MASTER CYLINDER (1999 MODELS) 2.11

## REMOVAL

### NOTE

Do not remove the master cylinder unless problems are being experienced.

1. See Figure 2-26. Drain brake fluid into a suitable container. Discard of used fluid according to local laws.
  - a. Open bleeder valve (metric) about 1/2-turn.
  - b. Install a length of plastic tubing over caliper bleeder valve. Place free end in a suitable container.
  - c. Pump brake hand lever to drain brake fluid.
  - d. Tighten bleeder valve to 3-5 ft-lbs (4.1-6.8 Nm)
2. Remove mirror from right handlebar.

### CAUTION

Damaged banjo bolt seating surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

3. See Figure 2-27. Remove banjo bolt (6) (metric) and two gaskets (4) to disconnect brake line (5) from master cylinder. Discard gaskets.
4. Remove screw (8) or unplug both terminals to detach brake lamp switch (7).

### NOTE

The individual parts of the brake lamp switch are not serviceable. Replace switch upon failure.

5. Remove two screws (1) (metric) and clamp (2) to detach master cylinder assembly from handlebar.

## DISASSEMBLY

1. See Figure 2-28. Detach front brake hand lever.
  - a. Remove nut (1) (metric) from lever pivot.
  - b. Remove pivot bolt (2) from lever pivot.
  - c. Detach front brake hand lever (3) from master cylinder assembly.
2. If present, detach front brake lamp switch by removing screw.
3. See Figure 2-29. Compress piston (2) and remove rubber boot (1).
4. Depress piston assembly and remove internal snap ring (3). Discard snap ring.
5. See Figure 2-30. Remove piston assembly (1-4) from front master cylinder.

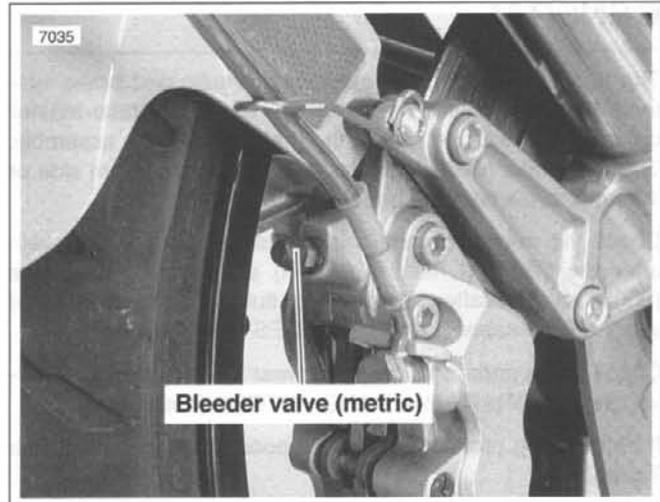


Figure 2-26. Draining Front Brake System

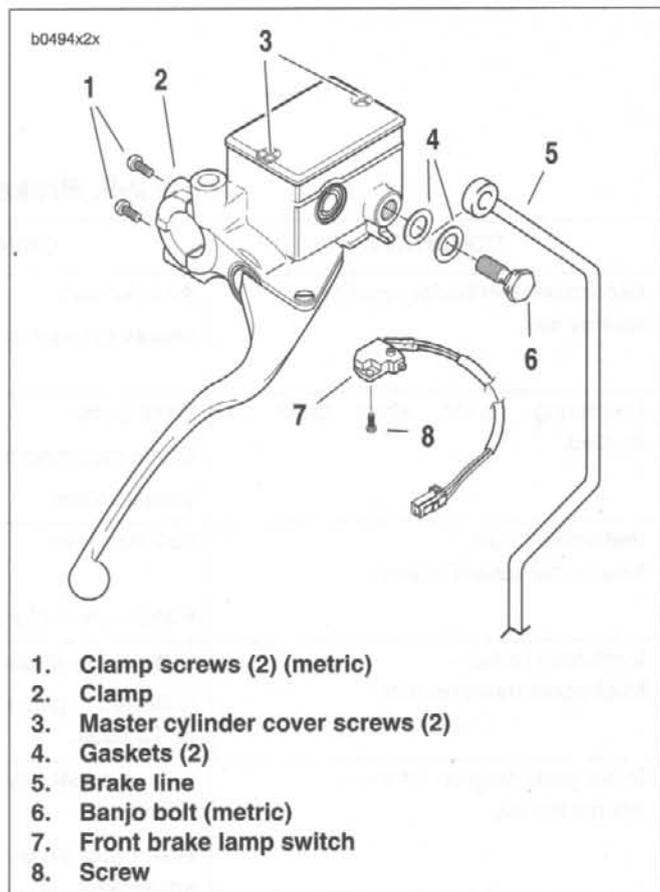


Figure 2-27. Front Master Cylinder

## CLEANING, INSPECTION AND REPAIR

### **WARNING**

Clean brake system components using denatured alcohol. Do not use mineral-base cleaning solvents, such as gasoline or paint thinner. Use of mineral-base solvents causes deterioration of rubber parts that continues after assembly. This could result in improper brake operation which could result in death or serious injury.

1. Clean all parts with denatured alcohol or D.O.T. 5 BRAKE FLUID. Do not contaminate with mineral oil or other solvents. Wipe dry with a clean, lint free cloth. Blow out drilled passages and bore with a clean air supply. Do not use a wire or similar instrument to clean drilled passages in bottom of reservoir.
2. Carefully inspect all parts for wear or damage and replace as necessary.
3. Inspect piston bore in master cylinder housing for scoring, pitting or corrosion. Replace housing if any of these conditions are found.
4. Inspect outlet port that mates with brake line fitting. As a critical sealing surface, replace housing if any scratches, dents or other damage is noted.
5. Inspect boot for cuts, tears or general deterioration. Replace as necessary.

## ASSEMBLY

1. See Figure 2-30. Check piston assembly components.
  - a. Small end of spring (1) sits behind primary cup (2). Large side of primary cup faces spring.
  - b. Secondary cup (3) sits within ridge at middle of piston (4).
2. Insert piston assembly, spring first, into master cylinder. Secure with a **new** snap ring (6).
3. Install ridge on boot (5) into groove on piston (4).
4. See Figure 2-28. Install front brake hand lever.
  - a. Align hole in lever (3) with hole in master cylinder assembly.
  - b. Lubricate pivot bolt (2) with LOCTITE ANTI-SEIZE.
  - c. Install pivot bolt through top of assembly. Tighten to 4-13 **in-lbs** (0.5-1.5 Nm).
  - d. Install nut (1) (metric). Tighten to 44-62 **in-lbs** (5.0-7.0 Nm).
5. See Figure 2-27. Install front brake lamp switch (7).
  - a. Attach front brake lamp switch with screw (8). Tighten to 7-13 **in-lbs** (0.8-1.5 Nm).
  - b. Test switch action. Tang on switch must release when hand lever is moved.

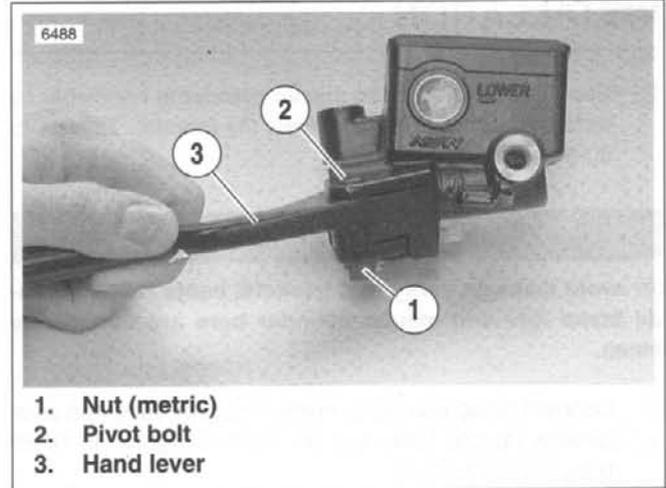


Figure 2-28. Hand Lever

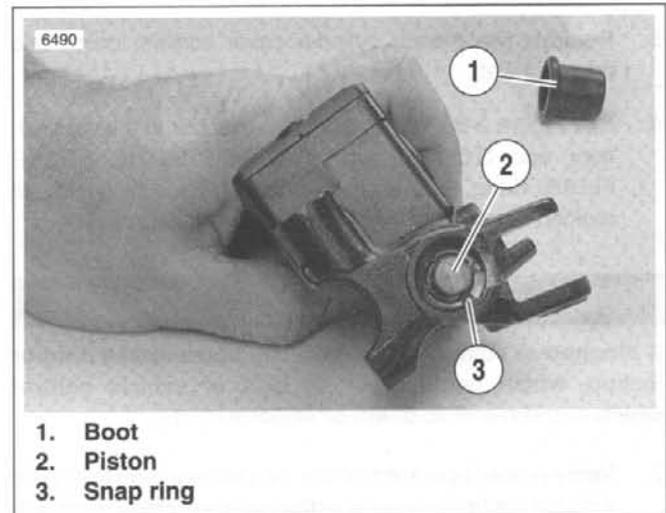


Figure 2-29. Snap Ring

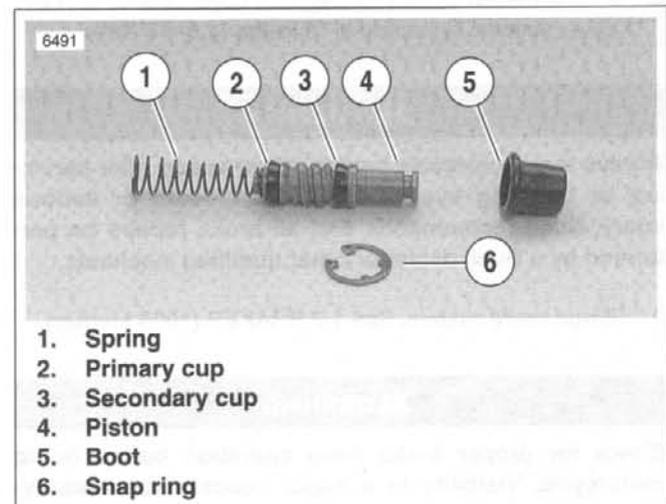


Figure 2-30. Piston Assembly

## INSTALLATION

1. See Figure 2-27. Fasten master cylinder to handlebar by installing clamp (2) and screws (1) (metric). Tighten to 80-90 **in-lbs** (9.0-10.2 Nm).

### CAUTION

To avoid leakage, verify that gaskets, banjo bolt, hydraulic brake line and master cylinder bore are completely clean.

2. Connect brake line (5) to master cylinder using two **new** gaskets (4) and banjo bolt (6) (metric). Tighten to 16-20 ft-lbs (21.7-27.1 Nm).
3. See Figure 2-31. Verify brake lamp switch wires are tight.
4. See Figure 2-32. Install mirror parallel to handlebars.
5. Remove two master cylinder cover screws, cover and cover gasket.
6. See Figure 2-33. With the master cylinder in a level position, add D.O.T. 5 SILICONE HYDRAULIC BRAKE FLUID. Bring fluid level to within 1/8 in. (3.2 mm) of molded boss inside front master cylinder reservoir.

### WARNING

A plugged or covered relief port can cause brake drag or lockup, which could result in loss of vehicle control which could result in death or serious injury.

7. Verify proper operation of the master cylinder relief port. Actuate the brake lever with the reservoir cover removed. A slight spurt of fluid will break the surface if all internal components are working properly.
8. Attach master cylinder cover and cover gasket with two cover screws. Tighten to 9-13 **in-lbs** (1.0-1.5 Nm).

### WARNING

Always test motorcycle brakes at low speed after servicing or bleeding system. To prevent death or serious injury, Buell recommends that all brake repairs be performed by a Buell dealer or other qualified mechanic.

9. Bleed brake system. See 1.7 BRAKES (1999 Models).

### WARNING

Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.

10. Turn ignition key switch to IGN. Apply brake hand lever to test brake lamp operation. Turn ignition key switch to LOCK.

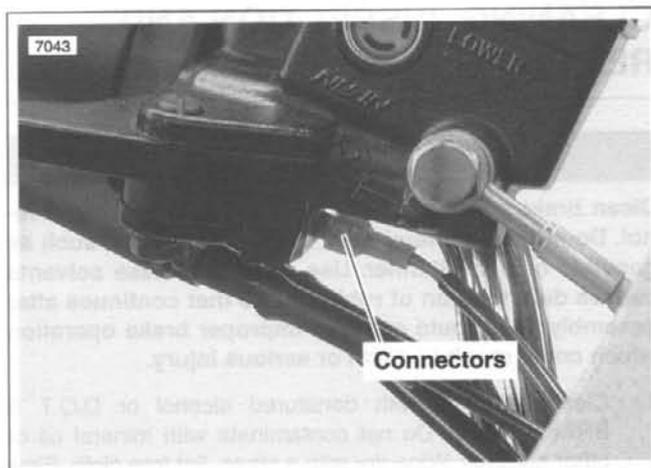


Figure 2-31. Brake Lamp Switch Connectors

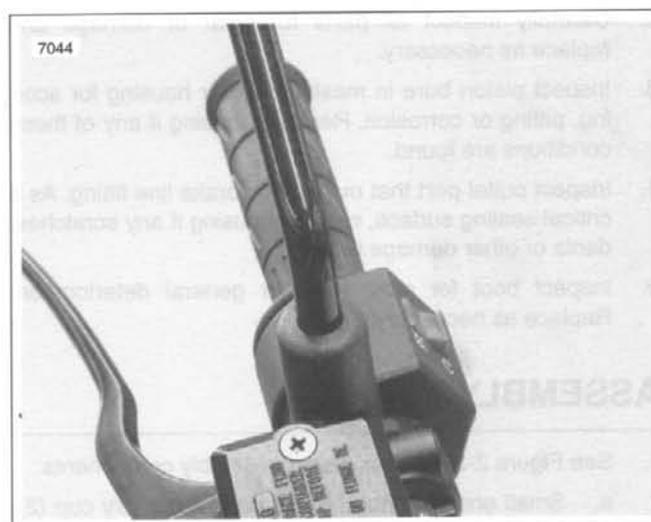


Figure 2-32. Mirror Installation

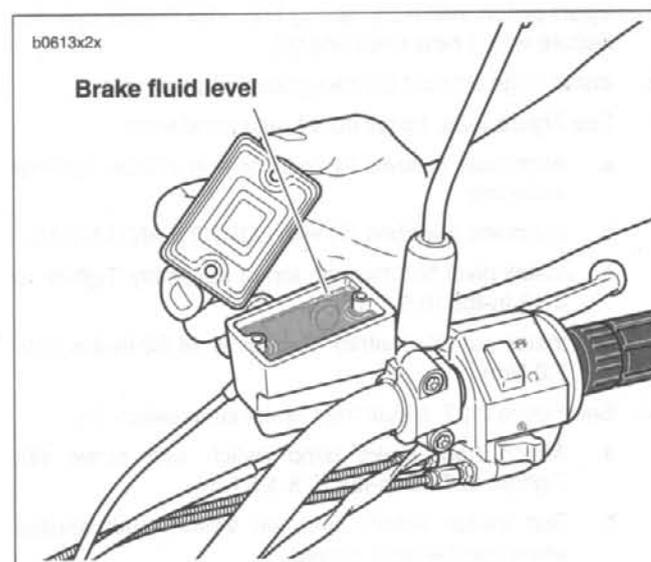


Figure 2-33. Brake Fluid Level

## REMOVAL

### NOTE

Steps 1 and 2 are not required for detaching caliper from rotor. Drain fluid only when disassembling caliper.

1. Drain and discard brake fluid.

### CAUTION

Damaged banjo bolt seating surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

2. See Figure 2-34. Remove banjo bolt (2) (metric) and two gaskets (3) to disconnect brake line (1) from caliper. Discard gaskets.
3. Remove brake pads.
  - a. Remove pin plug (4).
  - b. See Figure 2-35. Remove pad hanger pin (1) (metric).
  - c. Remove pad spring (2).
  - d. Remove brake pads from caliper.
4. See Figure 2-34. Detach caliper from mounts.
  - a. Remove both mounting screws (5) while supporting caliper above brake rotor.
  - b. Slowly remove caliper by tilting away from wheel and then pulling away from rotor.

## DISASSEMBLY

1. See Figure 2-35. Remove four screws (3) (metric) to separate caliper halves.
2. Remove two O-rings from between caliper halves and discard.
3. See Figure 2-36. Use BRAKE CALIPER PISTON REMOVER (Part No. B-42887) without adaptor to pull the six pistons from caliper bores.
4. See Figure 2-37. Pry O-rings (6) out of their respective grooves on each side of caliper. Discard O-rings.
5. Check bleeder valve (4) (metric). Remove and replace if damaged.

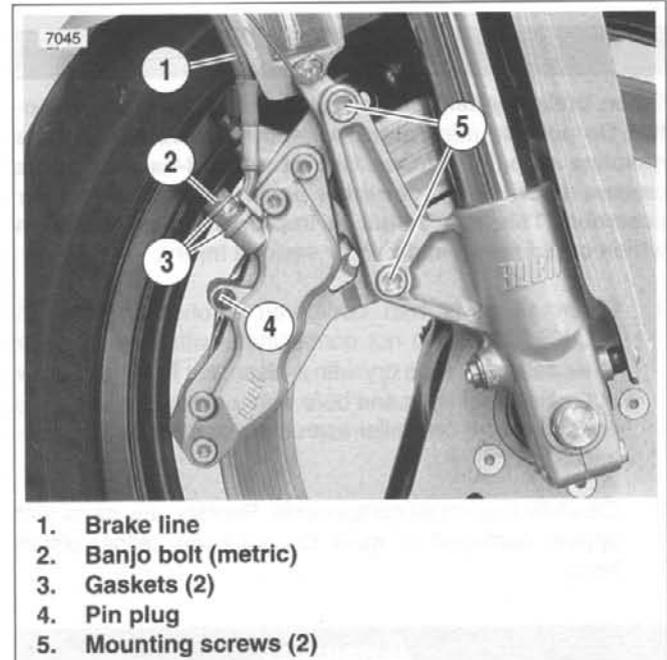


Figure 2-34. Front Brake Caliper Mounts

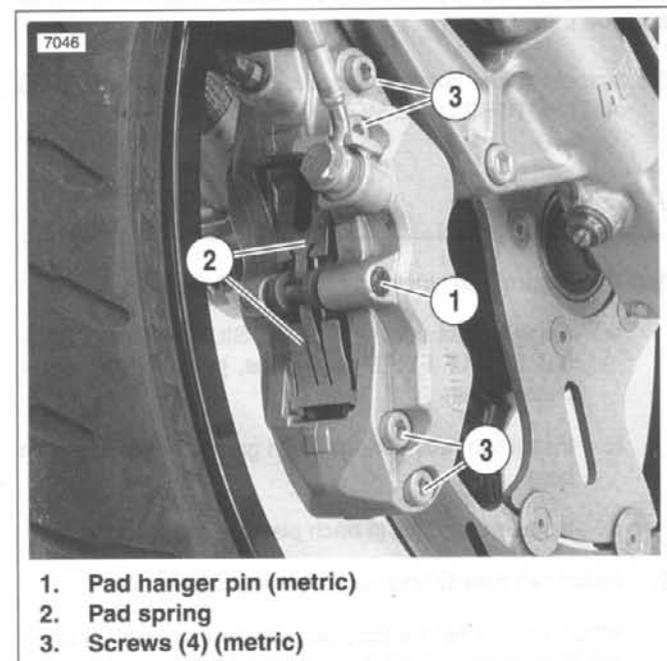


Figure 2-35. Pad Spring

## CLEANING, INSPECTION AND REPAIR

### WARNING

Clean brake system components using denatured alcohol. Do not use mineral-base cleaning solvents, such as gasoline or paint thinner. Use of mineral-base solvents causes deterioration of rubber parts that continues after assembly. This may result in improper brake operation which could result in death or serious injury.

1. Clean all parts with denatured alcohol or D.O.T. 5 BRAKE FLUID. Do not contaminate with mineral oil or other solvents. Wipe dry with a clean, lint free cloth. Blow out drilled passages and bore with a clean air supply. Do not use a wire or similar instrument to clean drilled passages.
2. Carefully inspect all components. Replace any parts that appear damaged or worn. Do not hone caliper piston bore.

### WARNING

Always replace brake pads in complete sets for correct brake operation. Never replace just one brake pad. Failure to install brake pads as a set could result in death or serious injury.

3. Inspect brake rotor and pads. See 1.8 BRAKE PADS AND ROTORS (1999 MODELS).

## ASSEMBLY

1. See Figure 2-37. Install pistons and O-rings.
  - a. Apply a light coat of D.O.T. 5 SILICONE HYDRAULIC BRAKE FLUID to O-rings, pistons and caliper piston bores.
  - b. Install two **new** O-rings (6) in grooves of each piston bore.
  - c. Install pistons (5) in each piston bore.
2. Install two **new** O-rings (3) between caliper halves.
3. Attach caliper halves together with four screws (7) (metric). Tighten to 14.5-18 ft-lbs (19.6-24.4 Nm).
4. Install a **new** bleeder valve (4) (metric) if necessary. Tighten to 3-5 ft-lbs (4.1-6.8 Nm).

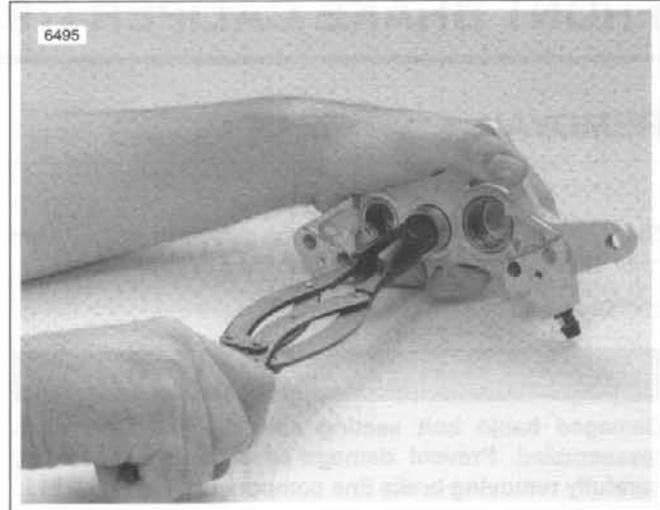
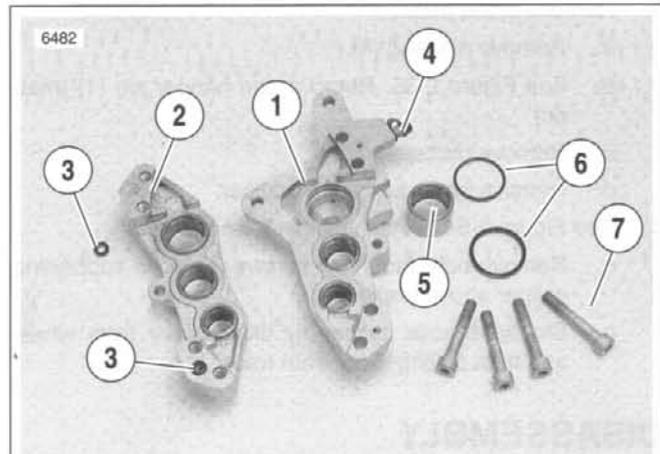


Figure 2-36. Removing Pistons



1. Outside caliper half
2. Inside caliper half
3. O-ring (2)
4. Bleeder valve (metric)
5. Piston (3 sizes, 2 each)
6. Piston O-rings (3 sizes, 2 each)
7. Screws (4) (metric)

Figure 2-37. Caliper O-rings and Pistons

## INSTALLATION

1. Fit front brake caliper on rotor.
  - a. Check rotor attachment to carrier. Inspect all six brake drive pins for missing hardware.
  - b. Make sure rotor is centered on carrier. Use two clamps on rotor and carrier to reduce free play and center rotor.
  - c. Slide caliper over front brake rotor without brake pads installed.
2. See Figure 2-34. Apply LOCTITE THREADLOCKER 272 (red) to both caliper mounting screws (5). Install and tighten to 22-25 ft-lbs (29.8-33.9 Nm).
3. Install brake pads.
  - a. See Figure 2-38. Insert brake pads from behind.
  - b. See Figure 2-35. Install pad spring (2) with opening at top as shown.
  - c. Install pad hanger pin (1) (metric). Tighten to 11-14.5 ft-lbs (14.7-19.6 Nm).
  - d. See Figure 2-34. Install pin plug (4). Tighten to 1.5-2.1 ft-lbs (2.0-2.9 Nm).

### CAUTION

To avoid leakage, verify that gaskets, banjo bolt, hydraulic brake line and caliper bore are completely clean.

4. Connect brake line (1) to caliper using two **new** gaskets (3) and banjo bolt (2) (metric). Tighten to 16-20 ft-lbs (21.7-27.1 Nm).
5. See Figure 2-39. Remove both master cylinder cover screws (2). Remove master cylinder cover (1) and gasket.
6. With the master cylinder in a level position, verify that the brake fluid level is 1/8 in. (3.2 mm) from molded boss inside reservoir. Add D.O.T. 5 SILICONE HYDRAULIC BRAKE FLUID if necessary.

### WARNING

A plugged or covered relief port can cause brake drag or lockup, which could result in loss of vehicle control which could result in death or serious injury.

7. Verify proper operation of the master cylinder relief port. Actuate the brake lever with the reservoir cover removed. A slight spurt of fluid will break the surface if all internal components are working properly.

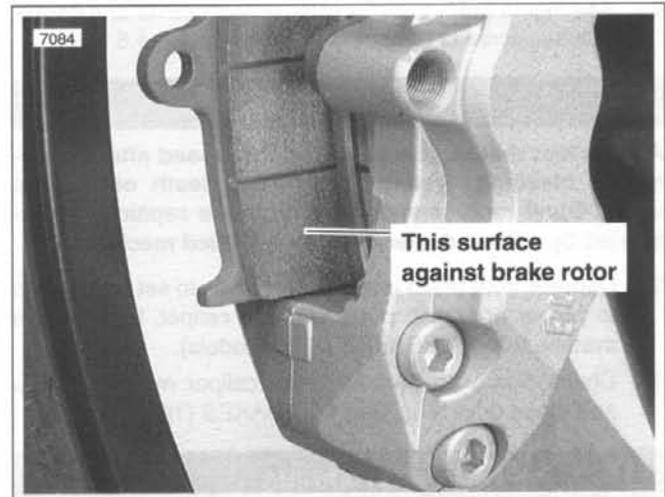


Figure 2-38. Installing Brake Pads

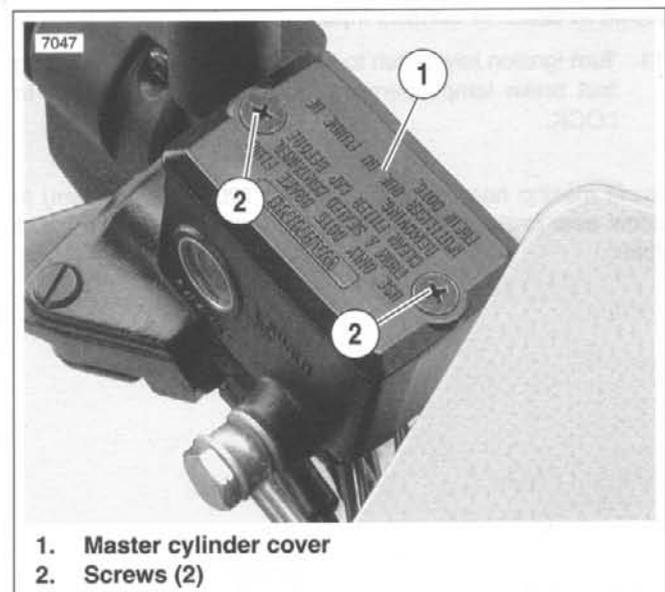


Figure 2-39. Master Cylinder Cover

8. See Figure 2-40. Install master cylinder cover and gasket with two screws. Tighten to 9-13 **in-lbs** (1.0-1.5 Nm).

**⚠ WARNING**

**Always test motorcycle brakes at low speed after servicing or bleeding system. To prevent death or serious injury, Buell recommends that all brake repairs be performed by a Buell dealer or other qualified mechanic.**

9. Depress front brake lever several times to set brake pads to proper operating position within caliper. Bleed brake system. See 1.7 BRAKES (1999 Models).
10. Check clearance between front caliper mounting bolts and brake drive pins. See 1.7 BRAKES (1999 Models).

**⚠ WARNING**

**Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.**

11. Turn ignition key switch to IGN. Apply brake hand lever to test brake lamp operation. Turn ignition key switch to LOCK.

**NOTE**

*Avoid making hard stops for the first 100 miles (160 km) to allow **new** brake pads to "wear in" properly with the brake rotor.*



**Figure 2-40. Front Master Cylinder Gasket**

## REMOVAL

1. Drain and discard brake fluid. See Step 1 (Removal) in 2.11 FRONT BRAKE MASTER CYLINDER (1999 Models).
2. See Figure 2-41. Remove screw (4) to detach brake line clamp and wire guide (5) from right side of lower triple clamp.

### CAUTION

Damaged banjo bolt seating surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

3. Remove master cylinder banjo bolt (1) (metric) and two gaskets (2) to disconnect brake line from master cylinder. Discard gaskets.
4. Remove caliper banjo bolt (6) (metric) and two gaskets (7) to disconnect brake line from caliper. Discard gaskets.
5. Carefully inspect the brake line for dents, cuts or other defects. Replace the brake line if any damage is noted.

## INSTALLATION

### CAUTION

To avoid leakage, verify that gaskets, banjo bolt, hydraulic brake line and master cylinder bore are completely clean.

1. See Figure 2-41. Connect brake line to master cylinder using two **new** gaskets (2) and banjo bolt (1) (metric). Loosely install bolt into master cylinder.
2. See Figure 2-42. From the master cylinder, the brake line runs downward in front of the right handlebar, where it turns inboard at the upper triple clamp. Loosely install clamp and wire guide (5) with screw (4) to attach front brake line clamp to right side of lower triple clamp. Route brake line through wire guide as shown in Figure 2-42.

### CAUTION

To avoid leakage, verify that gaskets, banjo bolt, hydraulic brake line and caliper bore are completely clean.

3. See Figure 2-41. Connect brake line to caliper using two **new** gaskets (7) and banjo bolt (6). Loosely install bolt into caliper.

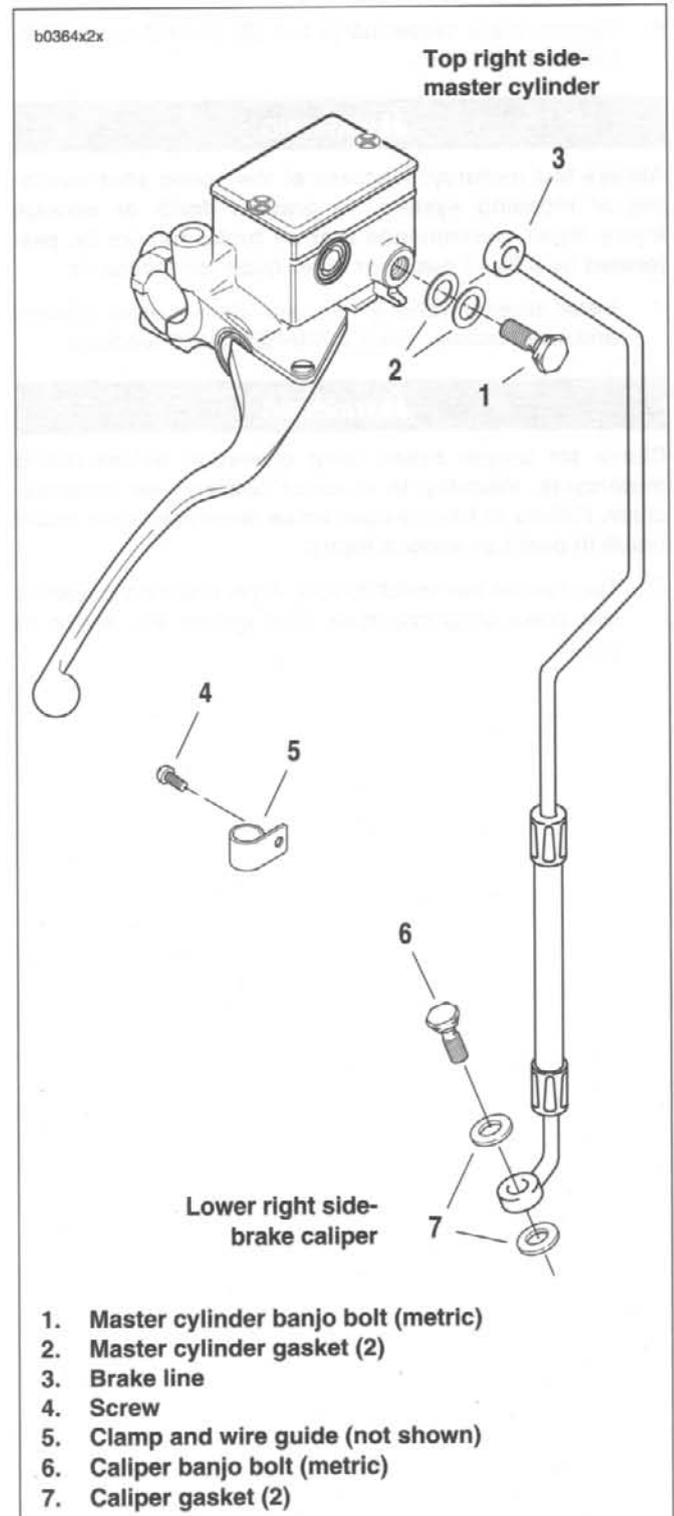


Figure 2-41. Front Brake Line

4. See Figure 2-42. Tighten clamp screw on lower triple clamp to 30-35 in-lbs (3.4-4.0 Nm).
5. See Figure 2-41. Tighten master cylinder banjo bolt (1) (metric) to 16-20 ft-lbs (21.7-27.1 Nm).
6. Tighten brake caliper banjo bolt (6) (metric) to 16-20 ft-lbs (21.7-27.1 Nm).

**⚠ WARNING**

**Always test motorcycle brakes at low speed after servicing or bleeding system. To prevent death or serious injury, Buell recommends that all brake repairs be performed by a Buell dealer or other qualified mechanic.**

7. Install bleeder valve if removed. Refill master cylinder and bleed brakes. See 1.7 BRAKES (1999 Models).

**⚠ WARNING**

**Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.**

8. Turn ignition key switch to IGN. Apply brake hand lever to test brake lamp operation. Turn ignition key switch to LOCK.



**Figure 2-42. Lower Triple Clamp**

## REMOVAL

1. See Figure 2-43. Drain brake fluid into a suitable container. Discard of used fluids according to local laws.
  - a. Remove cap from rear caliper bleeder valve. Open bleeder valve (metric) about 1/2 turn.
  - b. Install a length of plastic tubing over caliper bleeder valve. Place free end in a suitable container.
  - c. Pump brake pedal to drain brake fluid.
  - d. Tighten bleeder valve (metric) to 3-5 ft-lbs (4.1-6.8 Nm). Reinstall cap.

### CAUTION

Damaged banjo bolt surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

2. See Figure 2-44. Remove banjo bolt (1) (metric) and two gaskets (2) to detach brake line (3) from master cylinder (4). Discard gaskets.
3. Remove cable strap holding brake reservoir hose to rear brake line.
4. Remove right side footrest mount. See 2.36 FOOTRESTS (1999 Models).
5. See Figure 2-45. Disconnect push rod from brake pedal turn buckle (4).
  - a. Spin locknut (3) away from top surface of turn buckle.
  - b. Turn rod adjuster (2) to free rod from turn buckle (4).
6. See Figure 2-46. Remove screws (2) (metric) to detach master cylinder (3) from frame.
7. See Figure 2-47. Detach remote reservoir.
  - a. Remove seat.
  - b. Remove top or bottom clamp on hose connected to master cylinder.
  - c. Remove screw to detach reservoir from frame if necessary.

## DISASSEMBLY

### NOTE

Do not disassemble master cylinder unless problems are experienced. Discard all seals during the disassembly procedure. Install a complete rebuild kit upon assembly.

1. See Figure 2-48. Slide rubber boot on rod assembly (3) away from master cylinder body (1).
2. Depress rod assembly (3) and remove internal snap ring (2). Discard snap ring.
3. Remove piston assembly (4) from master cylinder body.

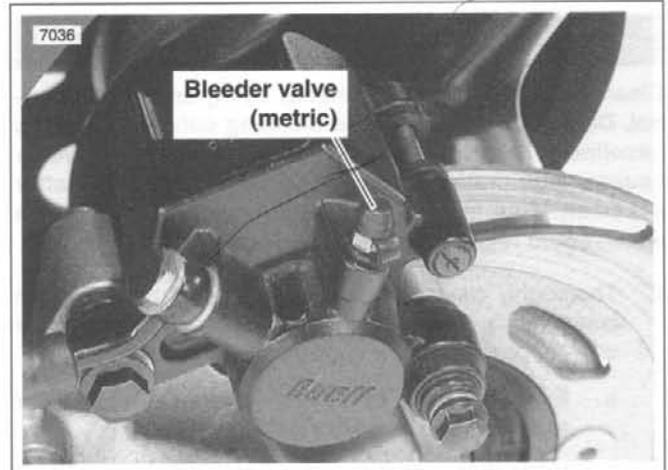


Figure 2-43. Rear Caliper Bleeder Valve (Metric)

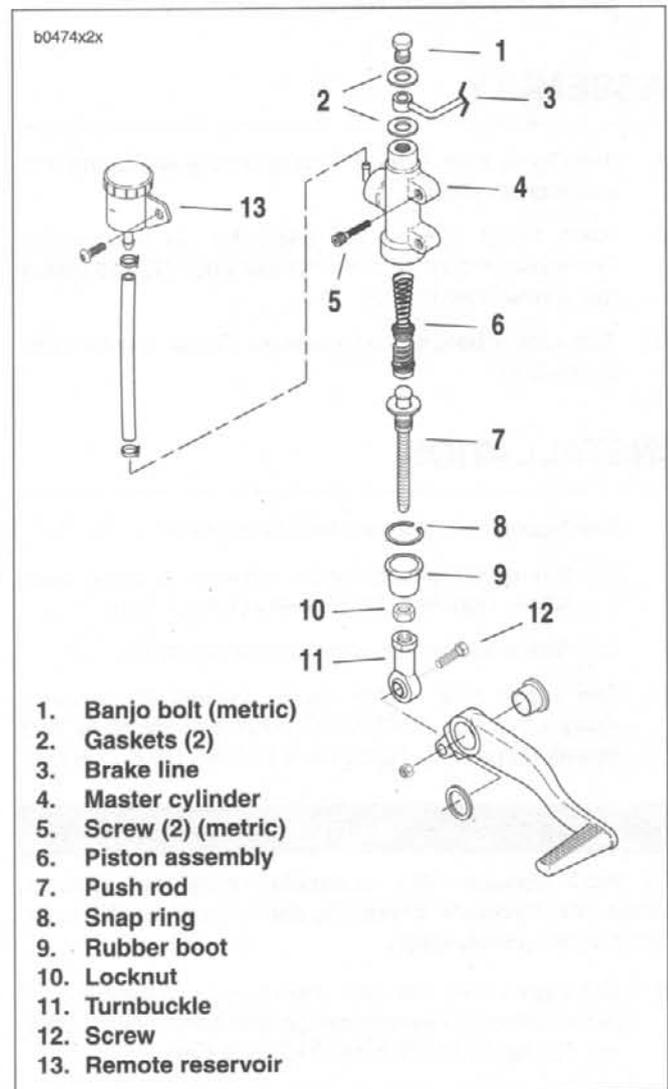


Figure 2-44. Rear Master Cylinder Assembly

## CLEANING, INSPECTION AND REPAIR

### WARNING

Clean brake system components using denatured alcohol. Do not use mineral-base cleaning solvents, such as gasoline or paint thinner. Use of mineral-base solvents causes deterioration of rubber parts that continues after assembly. This may result in improper brake operation which could result in death or serious injury.

1. Thoroughly clean master cylinder and all brake system components. Stand master cylinder on wooden block or towel to protect seating surfaces.
  - a. Examine walls of master cylinder reservoir for scratches and grooves. Replace if damaged.
  - b. Verify that vent holes on master cylinder are completely open and free of dirt or debris.
2. Inspect boot on front of master cylinder for cuts, tears or general deterioration. Replace if necessary.

## ASSEMBLY

1. See Figure 2-48. Insert piston assembly (4), spring first, into master cylinder.
2. Place round side of rod assembly (3) over piston. Depress piston into master cylinder body (1) and secure with a **new** snap ring (2).
3. Tuck rubber boot on rod assembly (3) into master cylinder body (1).

## INSTALLATION

1. See Figure 2-47. Connect remote reservoir.
  - a. If removed, attach remote reservoir to frame using screw. Tighten to 12-15 **in-lbs** (1.4-1.7 Nm).
  - b. Attach line to master cylinder using clamp.
2. See Figure 2-46. Attach master cylinder (3) to frame. Apply **LOCTITE THREADLOCKER 243** (blue) to both screws (2) (metric). Tighten to 8-10 **ft-lbs** (10.8-13.6 Nm).

### CAUTION

To avoid leakage after assembly, verify that gaskets, banjo bolt, hydraulic brake line and bore of master cylinder are completely clean.

3. See Figure 2-44. Connect brake line (3) to master cylinder (4) with two **new** gaskets (2) and banjo bolt (1) (metric). Tighten to 16-20 **ft-lbs** (21.7-27.1 Nm).

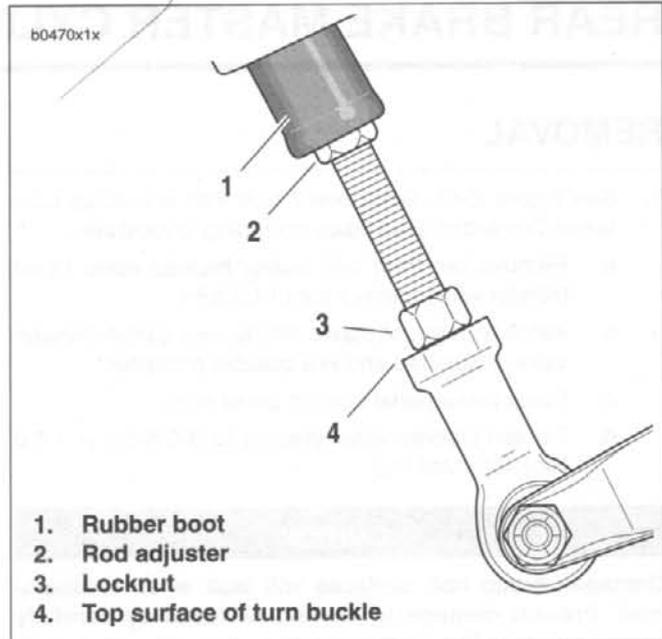


Figure 2-45. Brake Push Rod

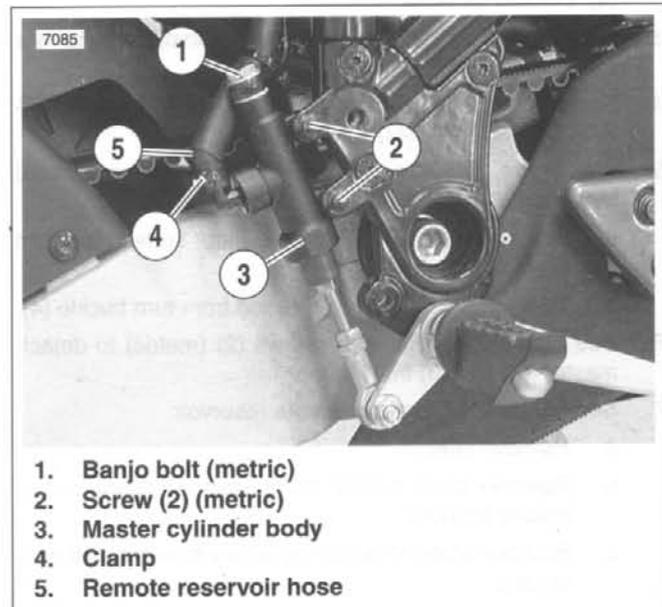


Figure 2-46. Master Cylinder Mounting

4. See Figure 2-45. Install push rod.
  - a. Screw push rod into turn buckle.
  - b. Seat brake pedal height adjustment. See 1.7 BRAKES (1999 Models).

**WARNING**

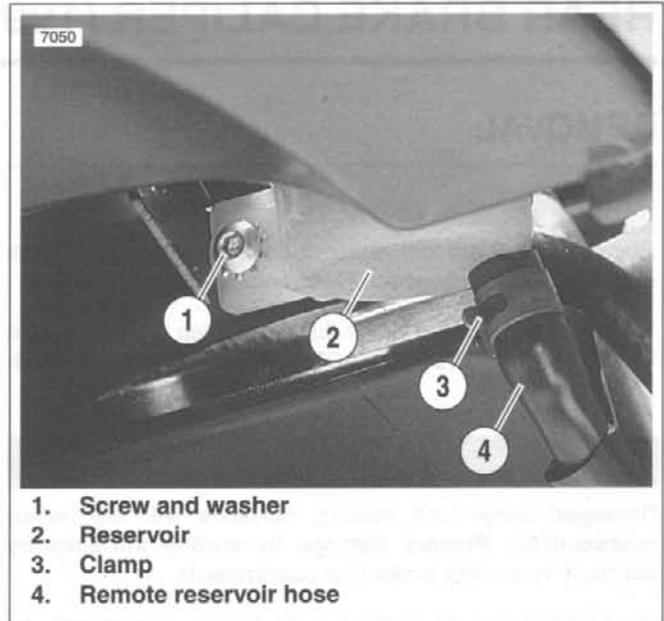
Always test motorcycle brakes at low speed after servicing or bleeding system. To prevent death or serious injury, Buell recommends that all brake repairs be performed by a Buell dealer or other qualified technician.

5. Add brake fluid and bleed brake system. See 1.7 BRAKES (1999 Models).
6. Attach brake reservoir hose to rear brake line with a **new** cable strap.
7. Install right side footrest mount. See 2.36 FOOTRESTS (1999 Models).
8. With motorcycle in a level position, check that brake fluid is between the upper and lower marks on reservoir. Add D.O.T. 5 SILICONE HYDRAULIC BRAKE FLUID if necessary. Be sure gasket and cap on reservoir fit securely.

**WARNING**

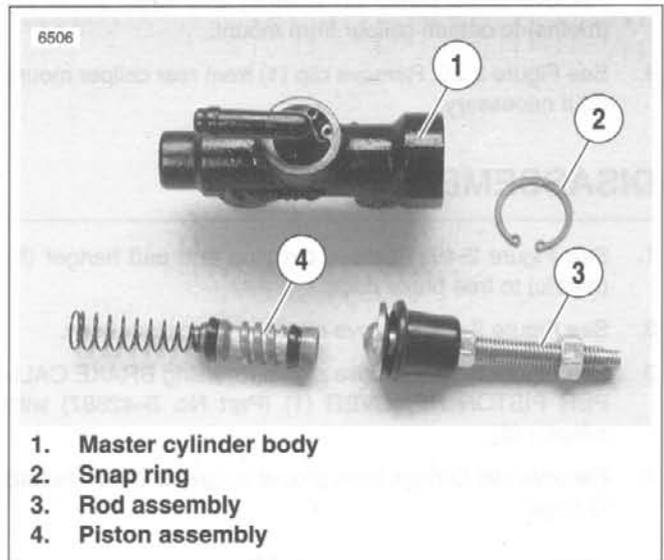
Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.

9. Turn ignition key switch to IGN. Apply rear brake pedal to test brake lamp operation. Turn ignition key switch to LOCK.



1. Screw and washer
2. Reservoir
3. Clamp
4. Remote reservoir hose

Figure 2-47. Remote Reservoir



1. Master cylinder body
2. Snap ring
3. Rod assembly
4. Piston assembly

Figure 2-48. Master Cylinder Internals

## REMOVAL

### NOTE

Steps 1 and 2 are not required for detaching caliper from rotor. Drain fluid only when disassembling caliper.

1. Drain and discard brake fluid. See Step 1 (Removal) in 2.14 REAR BRAKE MASTER CYLINDER (1999 models).

### CAUTION

Damaged banjo bolt seating surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

2. See Figure 2-49. Remove banjo bolt (2) (metric) and two gaskets (3) to disconnect brake line (1) from caliper. Discard gaskets.
3. Remove small screw (6) (metric) and large screw (7) (metric) to detach caliper from mount.
4. See Figure 2-50. Remove clip (1) from rear caliper mount (2) if necessary.

## DISASSEMBLY

1. See Figure 2-49. Remove pin plug and pad hanger (5) (metric) to free brake pads.
2. See Figure 2-51. Remove clip (1) from caliper body.
3. See Figure 2-52. Remove piston (3) using BRAKE CALIPER PISTON REMOVER (1) (Part No. B-42887) with adaptor (2).
4. Remove two O-rings from groove in caliper bore. Discard O-rings.

## CLEANING, INSPECTION AND REPAIR

### WARNING

Clean brake system components using denatured alcohol. Do not use mineral-base cleaning solvents, such as gasoline or paint thinner. Use of mineral-base solvents causes deterioration of rubber parts that continues after assembly. This may result in improper brake operation which could result in death or serious injury.

1. Clean all parts with denatured alcohol or D.O.T. 5 BRAKE FLUID. Do not contaminate with mineral oil or other solvents. Wipe dry with a clean, lint free cloth. Blow out drilled passages and bore with a clean air supply. Do not use a wire or similar instrument to clean drilled passages.

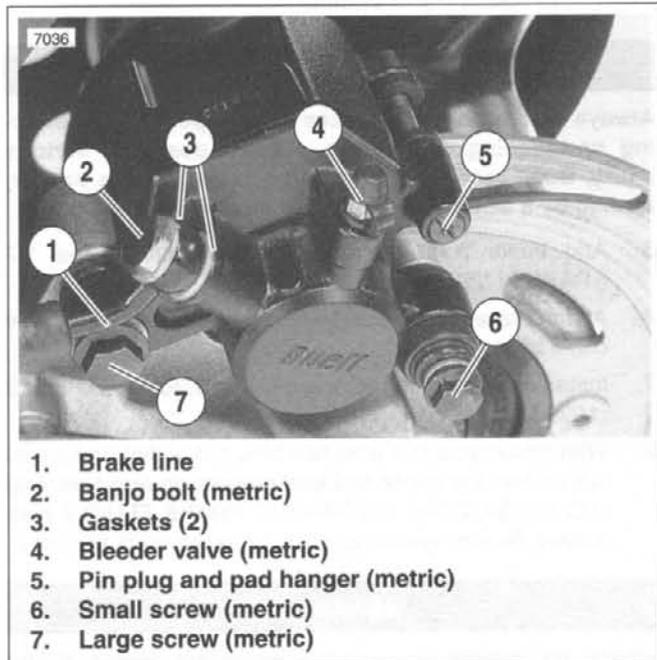


Figure 2-49. Rear Brake Caliper

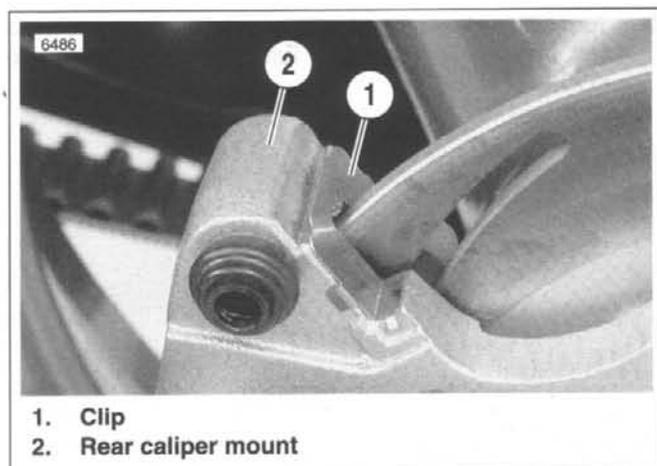


Figure 2-50. Caliper Mount Clip

2. Carefully inspect all components. Replace any parts that appear damaged or worn. Do not hone caliper piston bore.

### WARNING

Always replace brake pads in complete sets for correct brake operation. Never replace just one brake pad. Failure to install brake pads as a set could result in death or serious injury.

3. Inspect brake rotor and pads. See 1.8 BRAKE PADS AND ROTORS (1999 MODELS).

## ASSEMBLY

1. See Figure 2-51. Place clip (1) inside caliper body as shown.

### NOTE

To ensure proper brake pad-to-brake rotor clearance when the caliper is installed, piston must be pressed all the way into the bore whenever **new** brake pads are used.

2. See Figure 2-52. Install pistons and O-rings.
  - a. Apply a light coat of D.O.T. 5 SILICONE HYDRAULIC BRAKE FLUID to O-rings, piston and caliper piston bore.
  - b. Place two **new** O-rings inside grooves of piston bore.
  - c. Install piston (3) inside caliper body.
3. See Figure 2-51. Install brake pads (3) using pad hanger and pin plug (2).
  - a. Install pad hanger pin (metric). Tighten to 11-14.5 ft-lbs (14.7-19.6 Nm).
  - b. Install pin plug. Tighten to 1.5-2.1 ft-lbs (2.0-2.9 Nm).
4. Install a **new** bleeder valve (metric) if necessary. Tighten to 3-5 ft-lbs (4.1-6.8 Nm).

## INSTALLATION

1. See Figure 2-50. Install caliper mount clip (1) if removed.
2. See Figure 2-49. Install caliper assembly on caliper mount. Brake pad surfaces must face rear brake rotor.
  - a. Apply LOCTITE THREADLOCKER 272 (red) to both caliper mounting screws (6, 7) (metric).
  - b. Install large caliper screw (7) (metric). Tighten to 18-22 ft-lbs (24.4-29.8 Nm)
  - c. Install small caliper screw (6) (metric). Tighten to 14.5-18 ft-lbs (19.6-24.4 Nm).

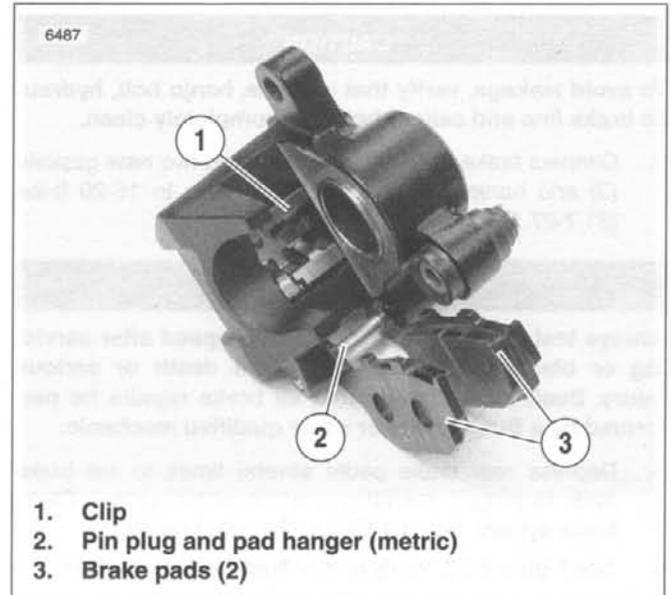


Figure 2-51. Brake Pads

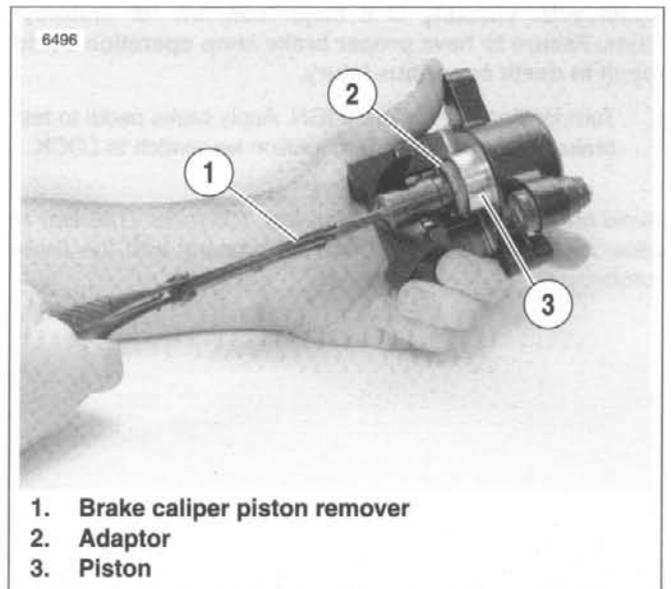


Figure 2-52. Removing Rear Brake Caliper Piston

### CAUTION

To avoid leakage, verify that gaskets, banjo bolt, hydraulic brake line and caliper bore are completely clean.

3. Connect brake line (1) to caliper using two new gaskets (3) and banjo bolt (2) (metric). Tighten to 16-20 ft-lbs (21.7-27.1 Nm).

### WARNING

Always test motorcycle brakes at low speed after servicing or bleeding system. To prevent death or serious injury, Buell recommends that all brake repairs be performed by a Buell dealer or other qualified mechanic.

4. Depress rear brake pedal several times to set brake pads to proper operating position within caliper. Bleed brake system. See 1.7 BRAKES (1999 Models).
5. See Figure 2-53. Verify proper fluid level in reservoir.

### WARNING

Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.

6. Turn ignition key switch to IGN. Apply brake pedal to test brake lamp operation. Turn ignition key switch to LOCK.

### NOTE

Avoid making hard stops for the first 100 miles (160 km) to allow new brake pads to "wear in" properly with the brake rotor.

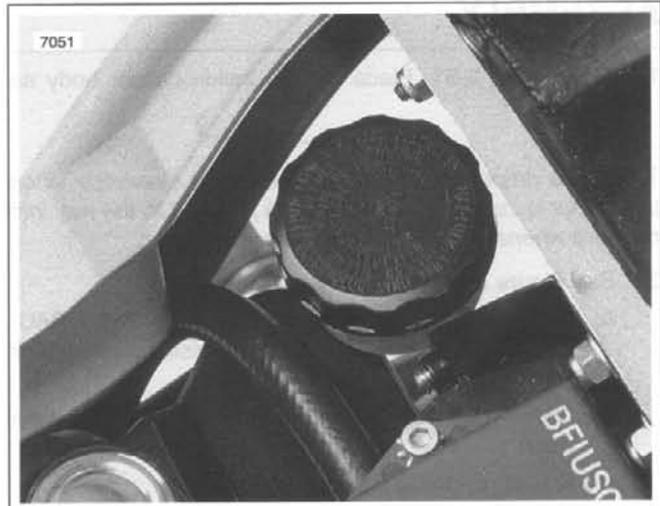


Figure 2-53. Rear Reservoir

## REMOVAL

1. Position motorcycle on a suitable lift and position REAR WHEEL SUPPORT STAND (Part No. B41174) under the swing arm. Secure motorcycle to lift.
2. Remove seat. See 2.48 SEAT (1999 Models).

### **WARNING**

To avoid accidental start-up of vehicle, disconnect the battery cables before proceeding. Always disconnect the negative battery cable first. If the positive cable should contact ground with the negative cable installed, the resulting sparks may cause a battery explosion, which could result in death or serious injury.

3. Disconnect both battery cables from battery, negative (-) cable first. See 1.4 BATTERY (1999 MODELS).
4. Cut cable tie holding oxygen sensor connector to battery strap. Remove battery strap and battery.
5. Remove rear brake fluid reservoir cap and drain brake fluid from rear brake system into suitable container. See Step 1 (Removal) in 2.14 REAR BRAKE MASTER CYLINDER (1999 models).
6. Remove two top bolts from oil tank.
7. See Figure 2-55. Cut two cable ties holding rear brake reservoir hose to rear brake line above rear master cylinder on right side of motorcycle.
8. See Figure 2-57. Disconnect two wires from rear brake light switch.

### **CAUTION**

Damaged banjo bolt seating surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

9. Remove rear master cylinder banjo bolt and two banjo washers. Discard banjo washers.
10. See Figure 2-54. Remove rear brake caliper banjo bolt and two banjo washers. Discard banjo washers.
11. Carefully push up on bottom of oil tank to allow rear brake line tangs to be freed from studs on the bottom of the oil tank.
12. See Figure 2-57. Cut cable tie on wiring harness and cable tie on vent tube on left side of bike.
13. Slide rear brake line into area where battery usually sits and then off of bike through left side of frame.

### **NOTE**

If replacing rear brake light switch, place brake line in vise gently (securing hexagonal rear brake light switch fitting) to prevent bending brake line while removing or installing rear brake lamp switch.

14. See Figure 2-56. Remove rear brake light switch from brake line.

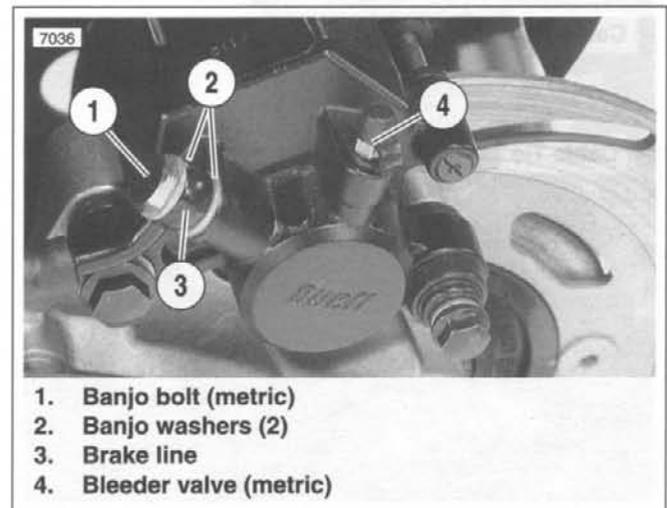


Figure 2-54. Rear Brake Caliper Banjo Bolt

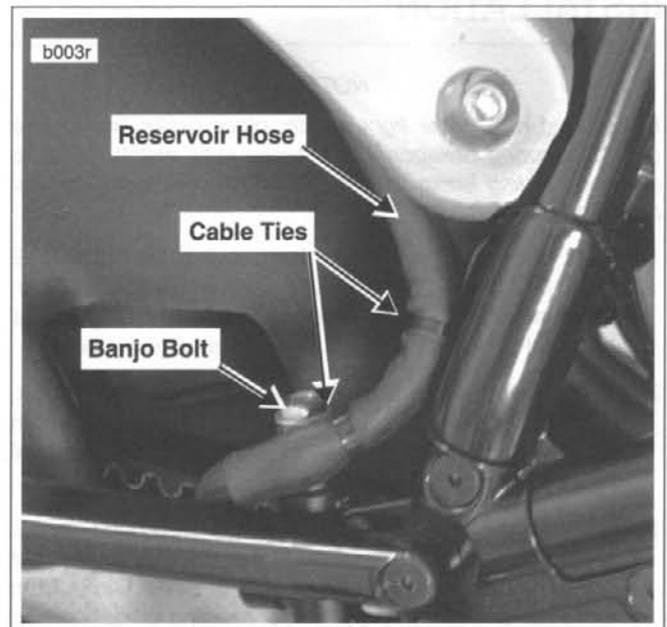


Figure 2-55. Rear Master Cylinder Banjo Bolt

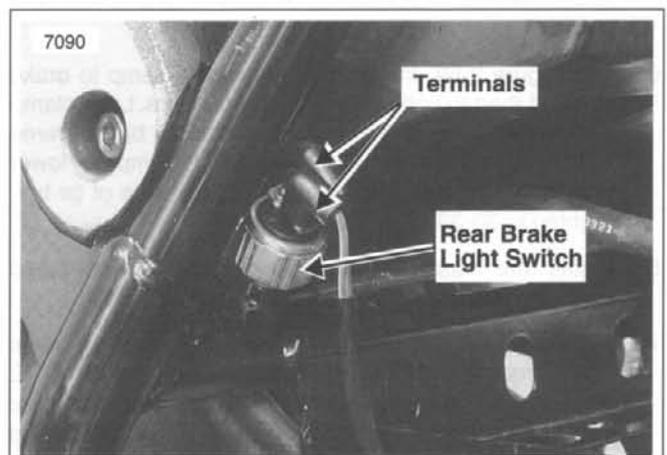


Figure 2-56. Rear Brake Light Switch

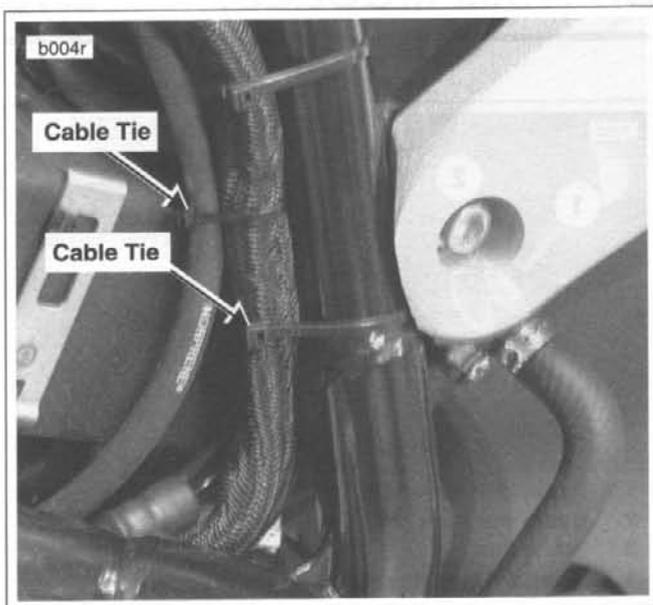


Figure 2-57. Rear Brake Line - Left Side

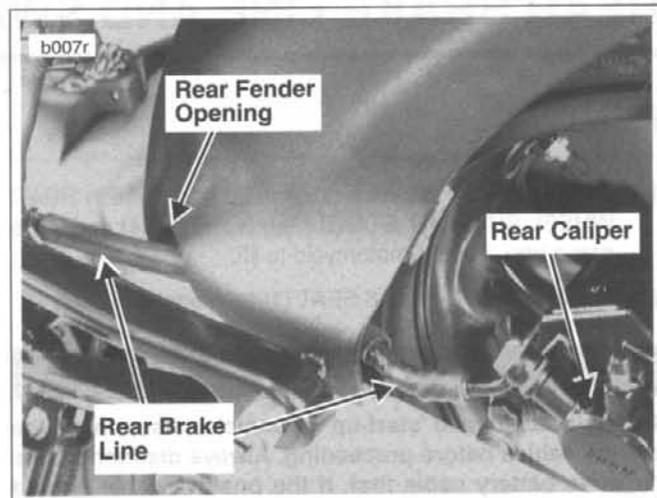


Figure 2-58. Rear Brake Line Routing

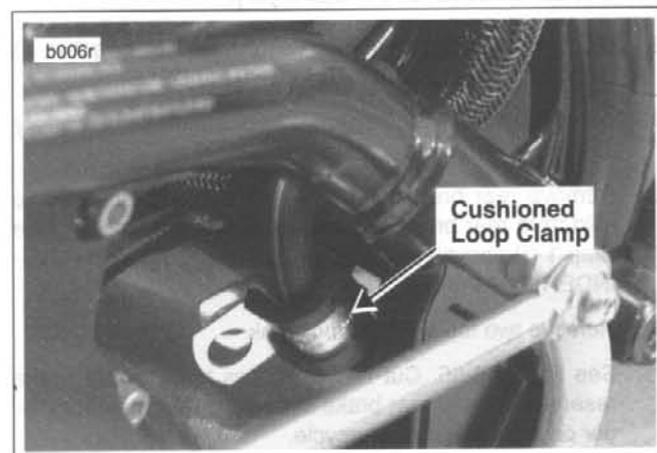


Figure 2-59. Loop Clamp Orientation Before Installation

## INSTALLATION

### NOTE

If replacing rear brake light switch, place brake line in vise gently (securing hexagonal rear brake light switch fitting) to prevent bending brake line while removing or installing rear brake lamp switch.

1. Coat threads of rear brake lamp switch with LOCTITE PIPE SEALANT WITH TEFLON and install to brake line. Tighten switch to 84-96 in-lbs (9.5-10.8 Nm). Tighten as required to orient terminals perpendicular to brake line.
2. Remove frame side fasteners from rear tie bar (locknut, washer and bolt). Discard locknut. NOTE: Using a 3 inch extension and deep well swivel socket simplifies removal of the tie bar fasteners.
3. See Figure 2-58. Working from the right side, install brake line and align metal portion of brake line with rear master cylinder. Route caliper side of brake line in front of tie bar and through rear fender opening to rear caliper.
4. Carefully push up on bottom of oil tank and position rear brake line tangs under studs on the bottom of the oil tank. Lower oil tank allowing studs to engage pockets in frame.
5. See Figure 2-59. Install loop cushioned clamp to brake line and then to bolt side of tie bar fasteners. Loop clamp is oriented down and to the left. Install tie bar to frame with bolt, washer and loop cushioned clamp on lower side of tie bar and **new** locknut on upper side of tie bar. Tighten to 30-33 ft-lbs (40.7-44.7 Nm).
6. Install rear master cylinder banjo bolt with **new** banjo washers and torque to 16-20 ft-lbs (21.7-27.1 Nm).
7. Install rear caliper banjo bolt with **new** banjo washers and torque to 16-20 ft-lbs (21.7-27.1 Nm). NOTE: Removing inner fender TORX screw and plastic washer will assist in tightening banjo bolt. If TORX screw and plastic washer are removed, tighten to 72-96 in-lbs (8.1-10.8 Nm) when installing.
8. See Figure 2-55. Install two cable ties (thick) to reservoir hose and rear brake line in **two** locations as shown in figure. Use care to avoid pinching hose.
9. Install top two bolts to oil tank. Tighten bolts to 10-12 in-lbs (1.1-1.4 Nm).
10. See Figure 2-57. Cable tie vent hose and wire harness to frame on left side of motorcycle. NOTE: Use thick cable tie on wire harness and thin cable tie on vent hose. Use care to avoid pinching hose.
11. Install battery with strap and nut. Tighten nut to 40 in-lbs (4.5 Nm).
12. Attach oxygen sensor connector to battery strap with **new** thin cable tie on left hand side of motorcycle.
13. See Figure 2-56. Connect rear brake light switch wires to rear brake light switch.
14. Attach rear brake light switch wires to battery strap with **new** thin cable tie on right hand side of motorcycle.
15. Connect positive battery cable. Tighten to 40 in-lbs (4.5 Nm).

### ⚠ WARNING

Always connect the positive battery cable first. If the positive cable should contact ground with the negative cable installed, the resulting sparks may cause a battery explosion, which could result in death or serious injury.

16. Connect negative battery cable. Tighten to 40 in-lbs (4.5 Nm).
17. Bleed rear brake system and install reservoir cap. See 1.7 BRAKES (1999 Models)

**⚠ WARNING**

After installing seat, pull upward on front of seat to be sure it is locked in position. If seat is loose, it could shift during vehicle operation resulting in loss of control of vehicle and death or serious injury.

18. Install seat. See 2.48 SEAT (1999 Models).

**⚠ WARNING**

Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.

19. Turn ignition key ON, depress rear brake pedal and check for proper brake light operation.

**⚠ WARNING**

After completing repairs or bleeding the system, always test motorcycle brakes at low speed. If brakes are not operating properly or braking efficiency is poor, testing at high speeds may result in death or serious injury.

20. Test ride motorcycle and check for proper brake operation.

## MODEL YEAR CHANGE

All 2000 Model Year Buell motorcycles are equipped with D.O.T. 4 brake fluid and **new**, D.O.T. 4 compatible banjo washers and rear brake lines.

- D.O.T. 4 compatible banjo washers are black in color.
- D.O.T. 4 compatible rear brake lines have an olive drab coating on the metal portion of the line.

## GENERAL

The front and rear brakes are fully hydraulic disc brake systems that require little maintenance. The front brake master cylinder is an integral part of the brake hand lever assembly. The rear brake master cylinder is located on the right side of the motorcycle near the brake pedal.

Check the master cylinder reservoirs for proper fluid levels after the first 500 miles (800 km) and every 5000 miles (8000 km) thereafter. Also inspect fluid levels at the end of every riding season. See 1.9 BRAKES (2000 Models).

Check brake pads and rotors for wear at every service interval. See 1.10 BRAKE PADS AND ROTORS (2000 MODELS).

Replace D.O.T. 4 BRAKE FLUID:

- Every 2 years.

Inspect front and rear brake lines and replace as required:

- Every 4 years.

Inspect front and rear caliper and master cylinder seals and replace as required:

- Every 2 years.

If determining probable causes of poor brake operation, see Table 2-6.

### WARNING

Clean brake system components using denatured alcohol. Do not use mineral-base cleaning solvents, such as gasoline or paint thinner. Use of mineral-base solvents causes deterioration of rubber parts that continues after assembly. This may result in improper brake operation which could result in death or serious injury.

### WARNING

Always test motorcycle brakes at low speed after servicing or bleeding system. To prevent death or serious injury, Buell recommends that all brake repairs be performed by a Buell dealer or other qualified technician.

### WARNING

D.O.T. 4 brake fluid can cause irritation of eyes and skin, and may be harmful if swallowed. If large amount of fluid is swallowed, induce vomiting by administering two tablespoons of salt in a glass of warm water. Call a doctor. In case of contact with skin or eyes, flush with plenty of water. Get medical attention for eyes. **KEEP BRAKE FLUID OUT OF THE REACH OF CHILDREN.** Failure to comply could result in death or serious injury.

### WARNING

Never mix D.O.T. 4 with other brake fluids (such as D.O.T. 5). Use only D.O.T. 4 brake fluid in motorcycles that specify D.O.T. 4 fluid on the reservoir cap. Mixing different types of fluid may adversely affect braking ability and lead to brake failure which could result in death or serious injury.

### WARNING

Use only fresh, uncontaminated D.O.T. 4 Fluid. Cans of fluid that have been opened may have been contaminated by moisture in the air or dirt. Use of contaminated brake fluid may adversely affect braking ability and lead to brake failure which could result in death or serious injury.

### WARNING

If rear brake line must be replaced, use only the brake line with the olive drab coating on the metal portion of the line (See Parts Catalog for Part No.) with DOT 4 brake systems. The previous black metal brake line is NOT compatible with DOT 4 brake fluid. Failure to comply may adversely affect braking ability and lead to brake failure which could result in death or serious injury.

### WARNING

Use only new black banjo washers (See Parts Catalog for Part No.) with D.O.T. 4 brake fluid. Earlier silver banjo washers are not compatible with D.O.T. 4 fluid and will not seal properly over time. Failure to comply may adversely affect braking ability and lead to brake failure which could result in death or serious injury.

### CAUTION

Cover painted surfaces and right handlebar switches and use care when removing brake reservoir cover and adding D.O.T. 4 brake fluid. Spilling D.O.T. 4 brake fluid on painted surfaces will result in cosmetic damage. Spilling brake fluid on switches may render them inoperative.

**Table 2-6. Brake Troubleshooting**

CONDITION	CHECK FOR	REMEDY
Excessive lever/pedal travel or spongy feel.	Air in system. Master cylinder low on fluid.	Bleed brake(s). Fill master cylinder with approved brake fluid.
Brake fade	Moisture in system.	Bleed brake(s). Fill master cylinder with approved brake fluid.
Chattering sound when brake is applied.	Worn pads. Loose mounting bolts. Warped rotor.	Replace brake pads. Tighten bolts. Replace rotor.
Ineffective brake – lever/pedal travels to limit.	Low fluid level. Piston cup not functioning.	Fill master cylinder with approved brake fluid, and bleed system. Rebuild cylinder.
Ineffective brake – lever/pedal travel normal.	Distorted or glazed rotor. Distorted, glazed or contaminated brake pads.	Replace rotor. Replace pads.
Brake pads drag on rotor – will not retract.	Cup in master cylinder not uncovering relief port. Rear brake pedal linkage out of adjustment.	Inspect master cylinder. Adjust linkage.

# FRONT BRAKE MASTER CYLINDER (2000 MODELS) 2.18

## REMOVAL

### NOTE

Do not remove the master cylinder unless problems are being experienced.

1. See Figure 2-60. Drain brake fluid into a suitable container. Discard of used fluid according to local laws.
  - a. Open bleeder valve (metric) about 1/2-turn.
  - b. Install a length of plastic tubing over caliper bleeder valve. Place free end in a suitable container.
  - c. Pump brake hand lever to drain brake fluid.
  - d. Tighten bleeder valve to 3-5 ft-lbs (4.1-6.8 Nm)
2. Remove mirror from right handlebar.

### CAUTION

Damaged banjo bolt seating surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

3. See Figure 2-61. Remove banjo bolt (6) (metric) and two banjo washers (4) to disconnect brake line (5) from master cylinder. Discard banjo washers.
4. Remove screw (8) or unplug both terminals to detach brake lamp switch (7).

### NOTE

The individual parts of the brake lamp switch are not serviceable. Replace switch upon failure.

5. Remove two screws (1) (metric) and clamp (2) to detach master cylinder assembly from handlebar.

## DISASSEMBLY

1. See Figure 2-62. Detach front brake hand lever.
  - a. Remove nut (1) (metric) from lever pivot.
  - b. Remove pivot bolt (2) from lever pivot.
  - c. Detach front brake hand lever (3) from master cylinder assembly.
2. If present, detach front brake lamp switch by removing screw.
3. See Figure 2-63. Compress piston (2) and remove rubber boot (1).
4. Depress piston assembly and remove internal snap ring (3). Discard snap ring.
5. See Figure 2-64. Remove piston assembly (1-4) from front master cylinder.

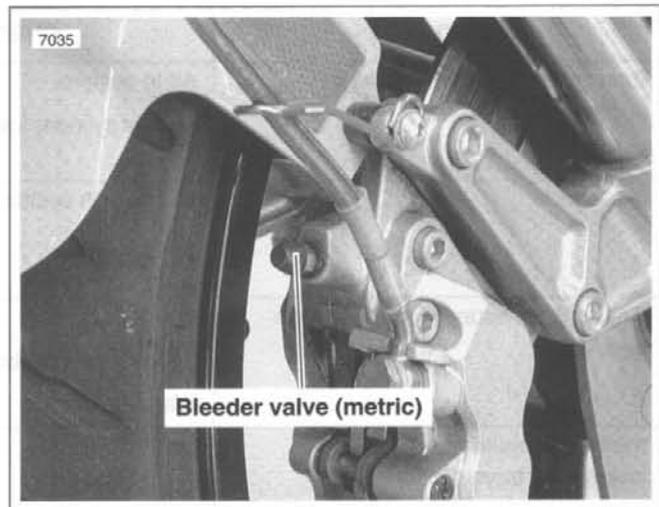


Figure 2-60. Draining Front Brake System

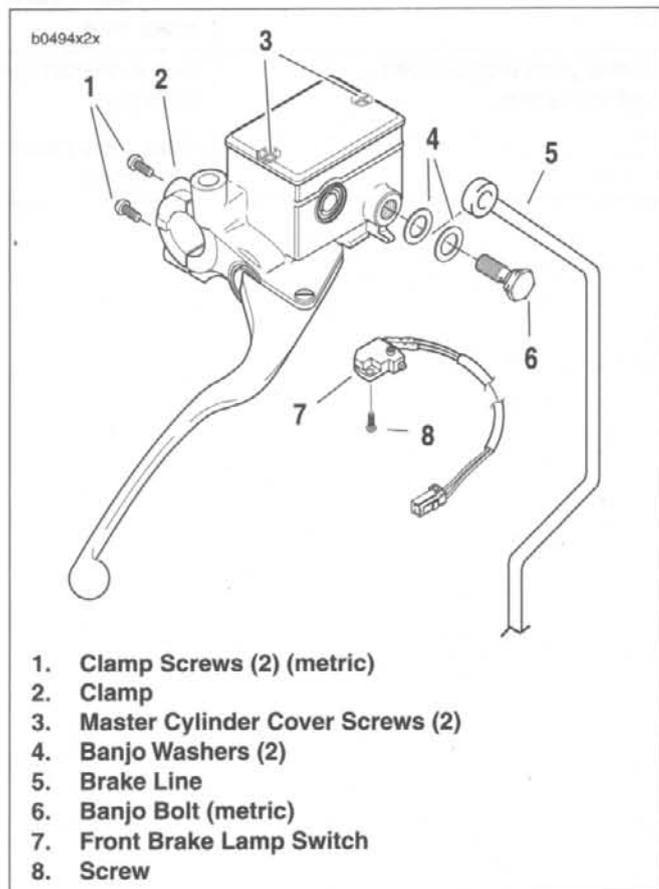


Figure 2-61. Front Master Cylinder

## CLEANING AND INSPECTION

### ⚠ WARNING

Clean brake system components using denatured alcohol. Do not use mineral-base cleaning solvents, such as gasoline or paint thinner. Use of mineral-base solvents causes deterioration of rubber parts that continues after assembly. This could result in improper brake operation which could result in death or serious injury.

1. Clean all parts with denatured alcohol or D.O.T. 4 BRAKE FLUID. Do not contaminate with mineral oil or other solvents. Wipe dry with a clean, lint free cloth. Blow out drilled passages and bore with a clean air supply. Do not use a wire or similar instrument to clean drilled passages in bottom of reservoir.
2. Carefully inspect all parts for wear or damage and replace as necessary.
3. Inspect piston bore in master cylinder housing for scoring, pitting or corrosion. Replace housing if any of these conditions are found.
4. Inspect outlet port that mates with brake line fitting. As a critical sealing surface, replace housing if any scratches, dents or other damage is noted.
5. Inspect boot for cuts, tears or general deterioration. Replace as necessary.

## ASSEMBLY

1. See Figure 2-64. Check piston assembly components.
  - a. Small end of spring (1) sits behind primary cup (2). Large side of primary cup faces spring.
  - b. Secondary cup (3) sits within ridge at middle of piston (4).
2. Insert piston assembly, spring first, into master cylinder. Secure with a **new** snap ring (6).
3. Install ridge on boot (5) into groove on piston (4).
4. See Figure 2-62. Install front brake hand lever.
  - a. Align hole in lever (3) with hole in master cylinder assembly.
  - b. Lubricate pivot bolt (2) with LOCTITE ANTI-SEIZE.
  - c. Install pivot bolt through top of assembly. Tighten to 4-13 **in-lbs** (0.5-1.5 Nm).
  - d. Install nut (1) (metric). Tighten to 44-62 **in-lbs** (5.0-7.0 Nm).
5. See Figure 2-61. Install front brake lamp switch (7).
  - a. Attach front brake lamp switch with screw (8). Tighten to 7-13 **in-lbs** (0.8-1.5 Nm).
  - b. Test switch action. Tang on switch must release when hand lever is moved.

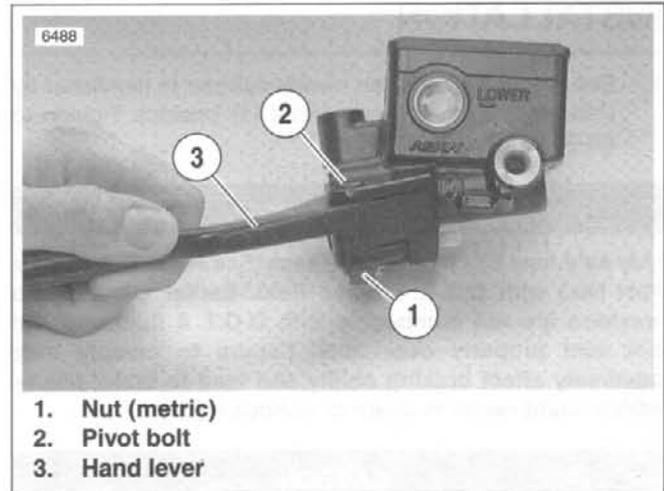


Figure 2-62. Hand Lever

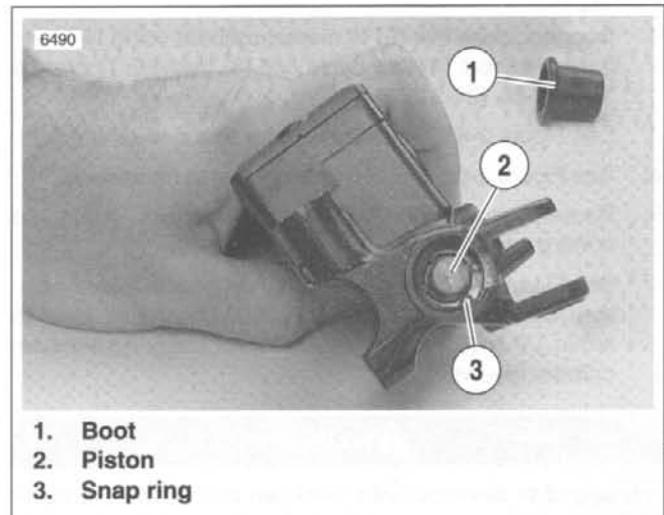


Figure 2-63. Snap Ring

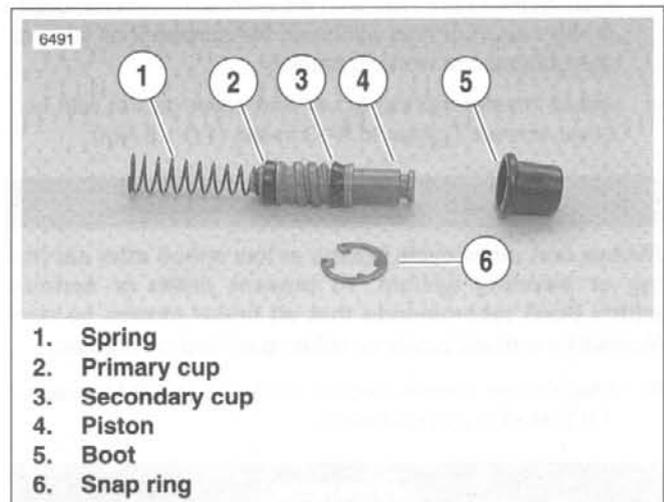


Figure 2-64. Piston Assembly

## INSTALLATION

1. See Figure 2-61. Fasten master cylinder to handlebar by installing clamp (2) and screws (1) (metric). Tighten to 80-90 in-lbs (9.0-10.2 Nm).

### WARNING

Use only new black banjo washers (See Parts Catalog for Part No.) with D.O.T. 4 brake fluid. Earlier silver banjo washers are not compatible with D.O.T. 4 fluid and will not seal properly over time. Failure to comply may adversely affect braking ability and lead to brake failure which could result in death or serious injury

### CAUTION

To avoid leakage, verify that banjo washers, banjo bolt, hydraulic brake line and master cylinder bore are completely clean.

2. Connect brake line (5) to master cylinder using two new banjo washers (4) and banjo bolt (6) (metric). Tighten to 16-20 ft-lbs (21.7-27.1 Nm).
3. See Figure 2-65. Verify brake lamp switch wires are tight.
4. See Figure 2-66. Install mirror parallel to handlebars.
5. Remove two master cylinder cover screws, cover and cover gasket.
6. See Figure 2-67. With the master cylinder in a level position, add D.O.T. 4 BRAKE FLUID. Bring fluid level to within 1/8 in. (3.2 mm) of molded boss inside front master cylinder reservoir.

### WARNING

A plugged or covered relief port can cause brake drag or lockup, which could result in loss of vehicle control which could result in death or serious injury.

7. Verify proper operation of the master cylinder relief port. Actuate the brake lever with the reservoir cover removed. A slight spurt of fluid will break the surface if all internal components are working properly.
8. Attach master cylinder cover and cover gasket with two cover screws. Tighten to 9-13 in-lbs (1.0-1.5 Nm).

### WARNING

Always test motorcycle brakes at low speed after servicing or bleeding system. To prevent death or serious injury, Buell recommends that all brake repairs be performed by a Buell dealer or other qualified technician.

9. Bleed brake system. See 1.7 BRAKES (1999 Models) or 1.9 BRAKES (2000 Models).

### WARNING

Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.

10. Turn ignition key switch to IGN. Apply brake hand lever to test brake lamp operation. Turn ignition key switch to LOCK.

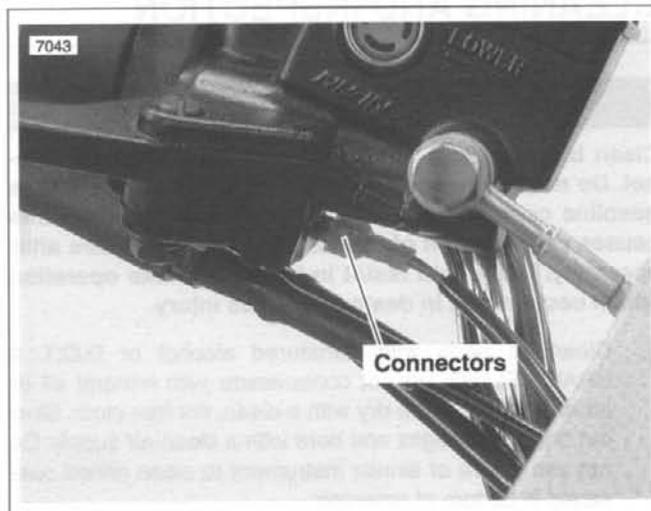


Figure 2-65. Brake Lamp Switch Connectors

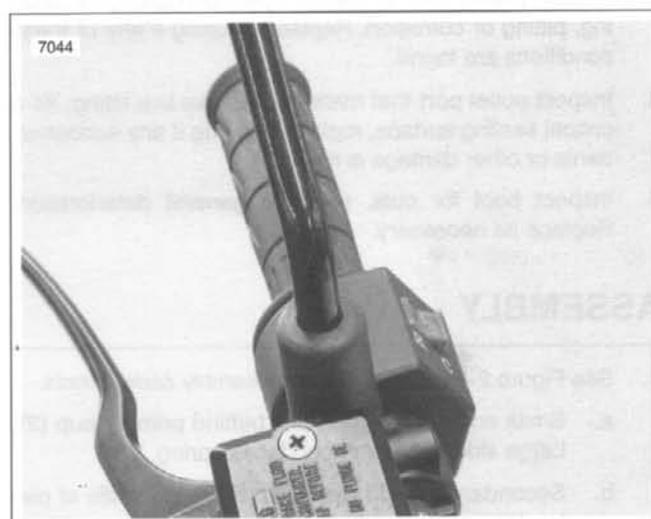


Figure 2-66. Mirror Installation

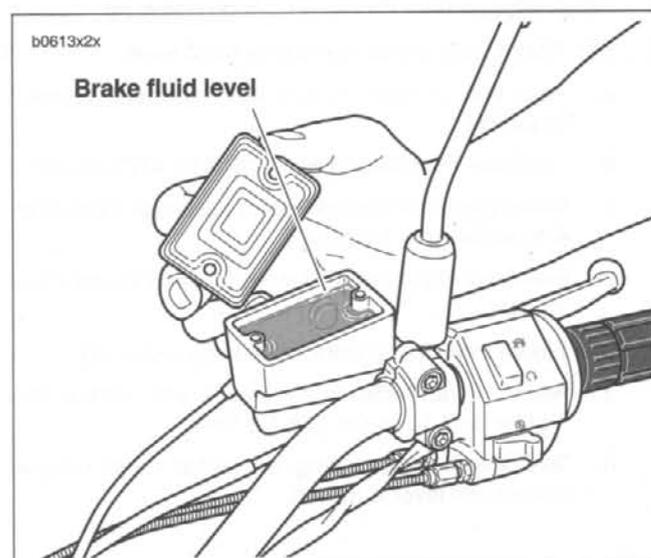


Figure 2-67. Brake Fluid Level

## REMOVAL

### NOTE

Steps 1 and 2 are not required for detaching caliper from rotor. Drain fluid only when disassembling caliper.

1. Drain and discard brake fluid.

### CAUTION

Damaged banjo bolt seating surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

2. See Figure 2-68. Remove banjo bolt (2) (metric) and two banjo washers (3) to disconnect brake line (1) from caliper. Discard banjo washers.
3. Remove brake pads.
  - a. Remove pin plug (4).
  - b. See Figure 2-69. Remove pad hanger pin (1) (metric).
  - c. Remove pad spring (2).
  - d. Remove brake pads from caliper.
4. See Figure 2-68. Detach caliper from mounts.
  - a. Remove both mounting screws (5) while supporting caliper above brake rotor.
  - b. Slowly remove caliper by tilting away from wheel and then pulling away from rotor.

## DISASSEMBLY

1. See Figure 2-69. Remove four screws (3) (metric) to separate caliper halves.
2. Remove two O-rings from between caliper halves and discard.
3. See Figure 2-70. Use BRAKE CALIPER PISTON REMOVER (Part No. B-42887) without adaptor to pull the six pistons from caliper bores.
4. See Figure 2-71. Pry O-rings (6) out of their respective grooves on each side of caliper. Discard O-rings.
5. Check bleeder valve (4) (metric). Remove and replace if damaged.

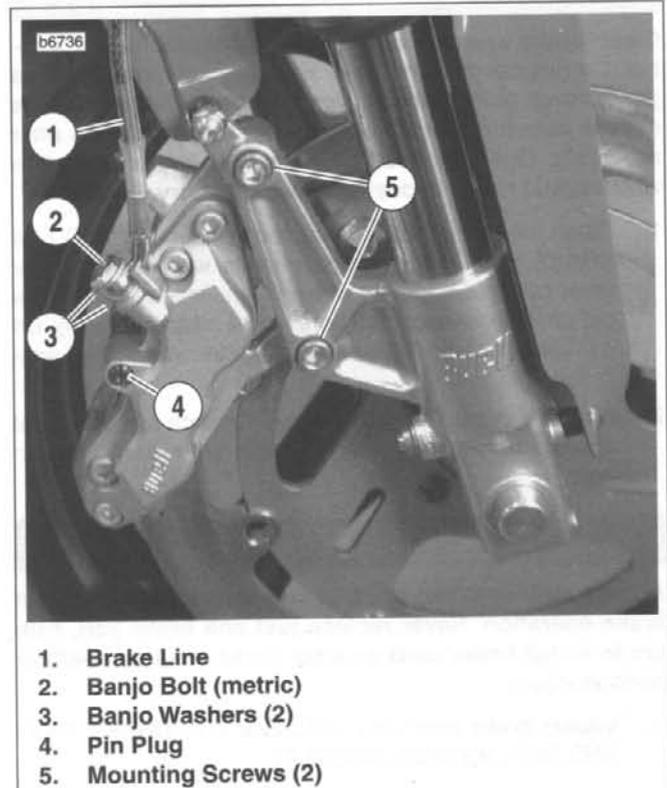


Figure 2-68. Front Brake Caliper Mounts

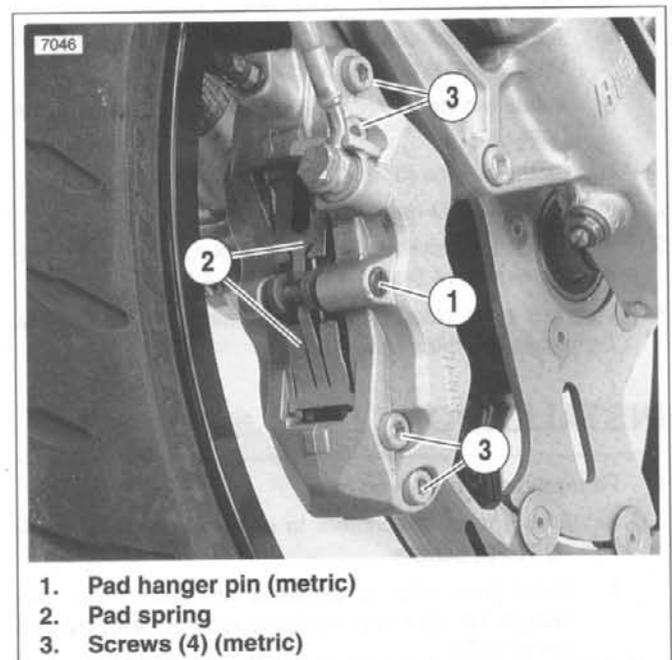


Figure 2-69. Pad Spring (Typical)

## CLEANING AND INSPECTION

### ⚠ WARNING

Clean brake system components using denatured alcohol. Do not use mineral-base cleaning solvents, such as gasoline or paint thinner. Use of mineral-base solvents causes deterioration of rubber parts that continues after assembly. This may result in improper brake operation which could result in death or serious injury.

1. Clean all parts with denatured alcohol or D.O.T. 4 BRAKE FLUID. Do not contaminate with mineral oil or other solvents. Wipe dry with a clean, lint free cloth. Blow out drilled passages and bore with a clean air supply. Do not use a wire or similar instrument to clean drilled passages.
2. Carefully inspect all components. Replace any parts that appear damaged or worn. Do not hone caliper piston bore.

### ⚠ WARNING

Always replace brake pads in complete sets for correct brake operation. Never replace just one brake pad. Failure to install brake pads as a set could result in death or serious injury.

3. Inspect brake rotor and pads. See 1.10 BRAKE PADS AND ROTORS (2000 MODELS).

## ASSEMBLY

1. See Figure 2-71. Install pistons and O-rings.
  - a. Apply a light coat of D.O.T. 4 BRAKE FLUID to O-rings, pistons and caliper piston bores.
  - b. Install two **new** O-rings (6) in grooves of each piston bore.
  - c. Install pistons (5) in each piston bore.
2. Install two **new** O-rings (3) between caliper halves.
3. Attach caliper halves together with four screws (7) (metric). Tighten to 14.5-18 ft-lbs (19.6-24.4 Nm).
4. Install a **new** bleeder valve (4) (metric) if necessary. Tighten to 3-5 ft-lbs (4.1-6.8 Nm).

## INSTALLATION

1. Fit front brake caliper on rotor.
  - a. Check rotor attachment to carrier. Inspect all six T-40 TORX screws.
  - b. Make sure rotor is centered on carrier. Use two clamps on rotor and carrier to reduce free play and center rotor.
  - c. Slide caliper over front brake rotor without brake pads installed.
2. See Figure 2-68. Apply LOCTITE THREADLOCKER 272 (red) to both caliper mounting screws (5). Install and tighten to 22-25 ft-lbs (29.8-33.9 Nm).

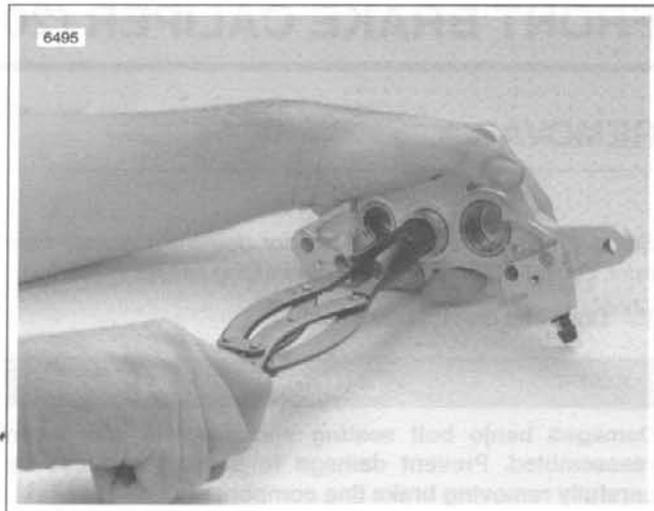


Figure 2-70. Removing Pistons

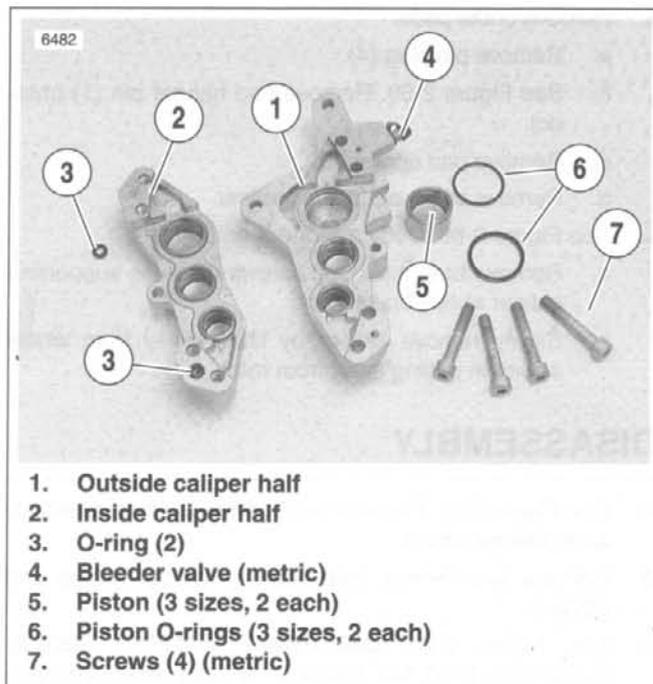


Figure 2-71. Caliper O-rings and Pistons

3. Install brake pads.
  - a. See Figure 2-72. Insert brake pads from behind.
  - b. See Figure 2-69. Install pad spring (2) with opening at top as shown.
  - c. Install pad hanger pin (1) (metric). Tighten to 11-14.5 ft-lbs (14.7-19.6 Nm).
  - d. See Figure 2-68. Install pin plug (4). Tighten to 1.5-2.1 ft-lbs (2.0-2.9 Nm).

### ⚠ WARNING

Use only new black banjo washers (See Parts Catalog for Part No.) with D.O.T. 4 brake fluid. Earlier silver banjo washers are not compatible with D.O.T. 4 fluid and will not seal properly over time. Failure to comply may adversely affect braking ability and lead to brake failure which could result in death or serious injury

### CAUTION

To avoid leakage, verify that banjo washers, banjo bolt, hydraulic brake line and caliper bore are completely clean.

4. Connect brake line (1) to caliper using two **new** banjo washers (3) and banjo bolt (2) (metric). Tighten to 16-20 ft-lbs (21.7-27.1 Nm).
5. See Figure 2-73. Remove both master cylinder cover screws (2). Remove master cylinder cover (1) plastic insert and gasket.
6. With the master cylinder in a level position, verify that the brake fluid level is 1/8 in. (3.2 mm) from molded boss inside reservoir. Add D.O.T. 4 BRAKE FLUID if necessary.

### WARNING

A plugged or covered relief port can cause brake drag or lockup, which may result in loss of vehicle control. These events could result in death or serious injury.

7. Verify proper operation of the master cylinder relief port. Actuate the brake lever with the reservoir cover removed. A slight spurt of fluid will break the surface if all internal components are working properly.
8. See Figure 2-73. Install master cylinder cover, plastic insert and gasket with two screws. Tighten to 9-13 in-lbs (1.0-1.5 Nm).

### WARNING

Always test motorcycle brakes at low speed after servicing or bleeding system. To prevent death or serious injury, Buell recommends that all brake repairs be performed by a Buell dealer or other qualified mechanic.

9. Depress front brake lever several times to set brake pads to proper operating position within caliper. Bleed brake system. See 1.9 BRAKES (2000 Models).
10. Check clearance between front caliper mounting bolts and T-40 TORX screws on rotor. See 1.9 BRAKES (2000 Models).

### WARNING

Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.

11. Turn ignition key switch to IGN. Apply brake hand lever to test brake lamp operation. Turn ignition key switch to LOCK.

### NOTE

Avoid making hard stops for the first 100 miles (160 km) to allow **new** brake pads to "wear in" properly with the brake rotor.

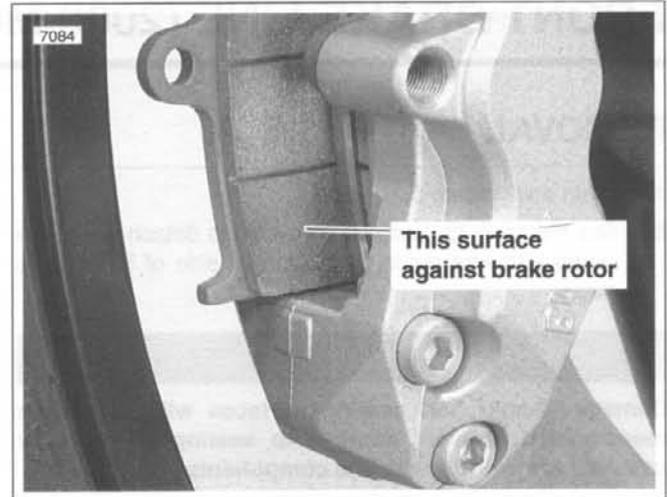


Figure 2-72. Installing Brake Pads

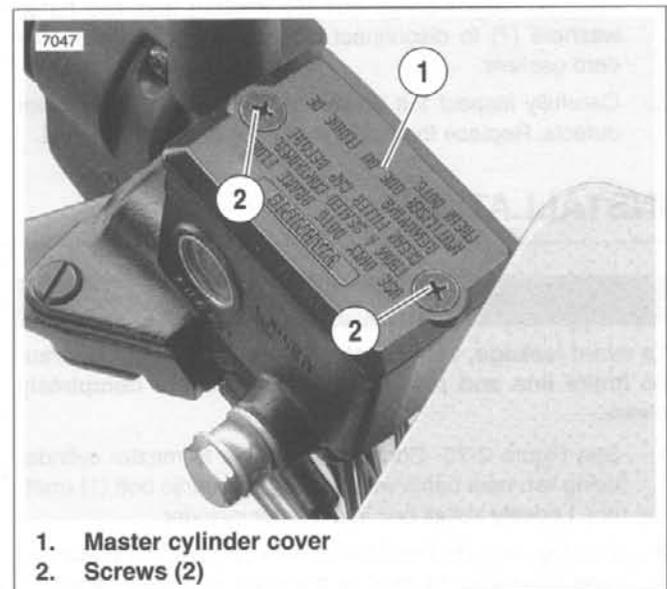


Figure 2-73. Master Cylinder Cover (Typical)

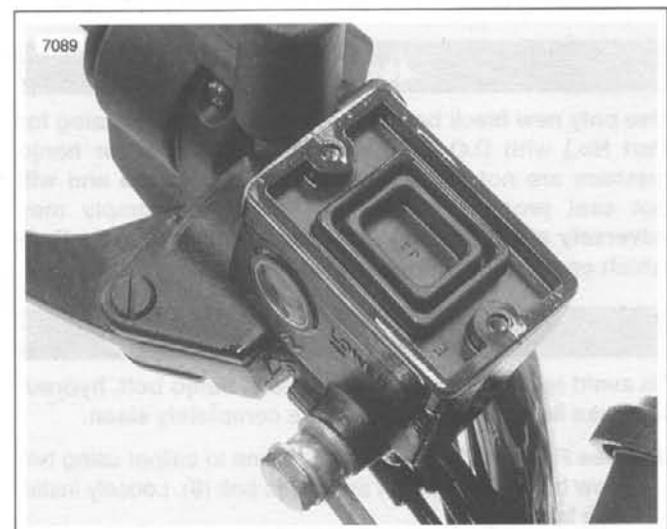


Figure 2-74. Front Master Cylinder Gasket (Insert not shown)

## REMOVAL

1. Drain and discard brake fluid.
2. See Figure 2-75. Remove screw (4) to detach brake line clamp and wire guide (5) from right side of lower triple clamp.

### CAUTION

Damaged banjo bolt seating surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

3. Remove master cylinder banjo bolt (1) (metric) and two banjo washers (2) to disconnect brake line from master cylinder. Discard banjo washers.
4. Remove caliper banjo bolt (6) (metric) and two banjo washers (7) to disconnect brake line from caliper. Discard gaskets.
5. Carefully inspect the brake line for dents, cuts or other defects. Replace the brake line if any damage is noted.

## INSTALLATION

### CAUTION

To avoid leakage, verify that gaskets, banjo bolt, hydraulic brake line and master cylinder bore are completely clean.

1. See Figure 2-75. Connect brake line to master cylinder using two **new** banjo washers (2) and banjo bolt (1) (metric). Loosely install bolt into master cylinder.
2. See Figure 2-76. From the master cylinder, the brake line runs downward in front of the right handlebar, where it turns inboard at the upper triple clamp. Loosely install clamp and wire guide (5) with screw (4) to attach front brake line clamp to right side of lower triple clamp. Route brake line through wire guide as shown in Figure 2-76.

### WARNING

Use only new black banjo washers (See Parts Catalog for Part No.) with D.O.T. 4 brake fluid. Earlier silver banjo washers are not compatible with D.O.T. 4 fluid and will not seal properly over time. Failure to comply may adversely affect braking ability and lead to brake failure which could result in death or serious injury

### CAUTION

To avoid leakage, verify that gaskets, banjo bolt, hydraulic brake line and caliper bore are completely clean.

3. See Figure 2-75. Connect brake line to caliper using two **new** banjo washers (7) and banjo bolt (6). Loosely install bolt into caliper.

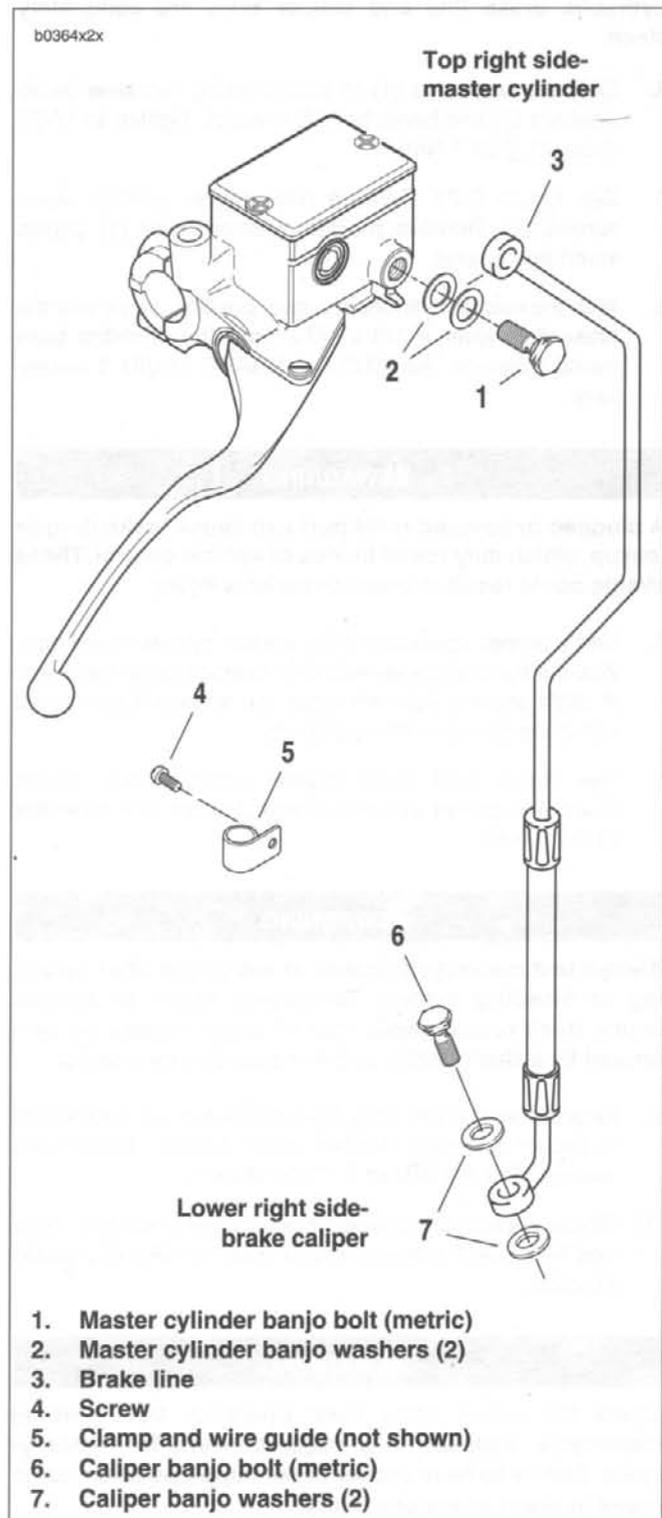


Figure 2-75. Front Brake Line

4. See Figure 2-76. Tighten clamp screw on lower triple clamp to 30-35 **in-lbs** (3.4-4.0 Nm).
5. See Figure 2-75. Tighten master cylinder banjo bolt (1) (metric) to 16-20 ft-lbs (21.7-27.1 Nm).
6. Tighten brake caliper banjo bolt (6) (metric) to 16-20 ft-lbs (21.7-27.1 Nm).

**⚠ WARNING**

**Always test motorcycle brakes at low speed after servicing or bleeding system. To prevent death or serious injury, Buell recommends that all brake repairs be performed by a Buell dealer or other qualified mechanic.**

7. Install bleeder valve if removed. Refill master cylinder and bleed brakes. See 1.9 BRAKES (2000 Models).

**⚠ WARNING**

**Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.**

8. Turn ignition key switch to IGN. Apply brake hand lever to test brake lamp operation. Turn ignition key switch to LOCK.



**Figure 2-76. Lower Triple Clamp**

## REMOVAL

1. See Figure 2-77. Drain brake fluid into a suitable container. Dispose of used fluids according to local laws.
  - a. Remove cap from rear caliper bleeder valve. Open bleeder valve (metric) about 1/2 turn.
  - b. Install a length of plastic tubing over caliper bleeder valve. Place free end in a suitable container.
  - c. Pump brake pedal to drain brake fluid.
  - d. Tighten bleeder valve (metric) to 3-5 ft-lbs (4.1-6.8 Nm). Reinstall cap.

### CAUTION

Damaged banjo bolt surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

2. See Figure 2-78. Remove banjo bolt (1) (metric) and two banjo washers (2) to detach brake line (3) from master cylinder (4). Discard banjo washers.
3. Remove cable strap holding brake reservoir hose to rear brake line.
4. Remove right side footrest mount. See 2.37 FOOTRESTS (2000 Models).
5. See Figure 2-79. Disconnect push rod from brake pedal turn buckle (4).
  - a. Spin locknut (3) away from top surface of turn buckle.
  - b. Turn rod adjuster (2) to free rod from turn buckle (4).
6. See Figure 2-80. Remove screws (2) (metric) to detach master cylinder (3) from frame.
7. See Figure 2-81. Detach remote reservoir.
  - a. Remove seat.
  - b. Remove top or bottom clamp on hose connected to master cylinder.
  - c. Remove screw to detach reservoir from frame if necessary.

## DISASSEMBLY

### NOTE

Do not disassemble master cylinder unless problems are experienced. Discard all seals during the disassembly procedure. Install a complete rebuild kit upon assembly.

1. See Figure 2-82. Slide rubber boot on rod assembly (3) away from master cylinder body (1).
2. Depress rod assembly (3) and remove internal snap ring (2). Discard snap ring.
3. Remove piston assembly (4) from master cylinder body.

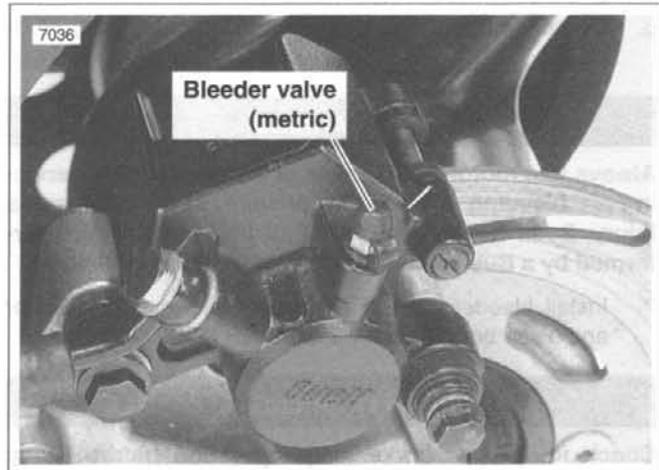


Figure 2-77. Rear Caliper Bleeder Valve (Metric)

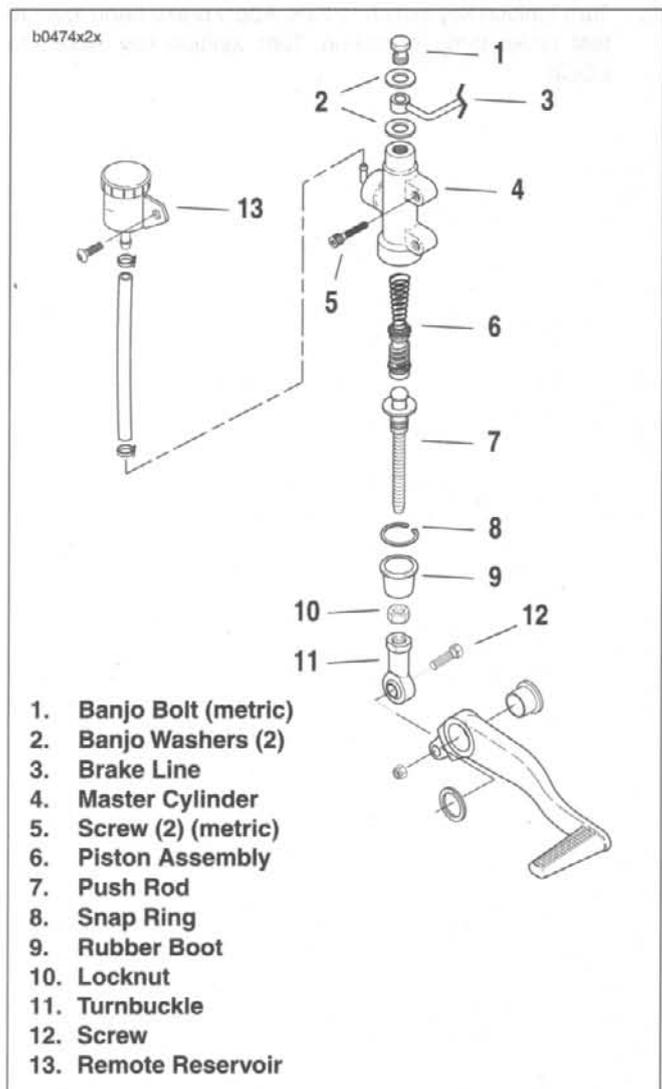


Figure 2-78. Rear Master Cylinder Assembly

## CLEANING AND INSPECTION

### ⚠ WARNING

Clean brake system components using denatured alcohol. Do not use mineral-base cleaning solvents, such as gasoline or paint thinner. Use of mineral-base solvents causes deterioration of rubber parts that continues after assembly. This may result in improper brake operation which could result in death or serious injury.

1. Thoroughly clean master cylinder and all brake system components. Stand master cylinder on wooden block or towel to protect seating surfaces.
  - a. Examine walls of master cylinder reservoir for scratches and grooves. Replace if damaged.
  - b. Verify that vent holes on master cylinder are completely open and free of dirt or debris.
2. Inspect boot on front of master cylinder for cuts, tears or general deterioration. Replace if necessary.

## ASSEMBLY

1. See Figure 2-82. Insert piston assembly (4), spring first, into master cylinder.
2. Place round side of rod assembly (3) over piston. Depress piston into master cylinder body (1) and secure with a **new** snap ring (2).
3. Tuck rubber boot on rod assembly (3) into master cylinder body (1).

## INSTALLATION

1. See Figure 2-81. Connect remote reservoir.
  - a. If removed, attach remote reservoir to frame using screw. Tighten to 12-15 **in-lbs** (1.4-1.7 Nm).
  - b. Attach line to master cylinder using clamp.
2. See Figure 2-80. Attach master cylinder (3) to frame. Apply **LOCTITE THREADLOCKER 243** (blue) to both screws (2) (metric). Tighten to 8-10 **ft-lbs** (10.8-13.6 Nm).

### ⚠ WARNING

Use only new black banjo washers (See Parts Catalog for Part No.) with D.O.T. 4 brake fluid. Earlier silver banjo washers are not compatible with D.O.T. 4 fluid and will not seal properly over time. Failure to comply may adversely affect braking ability and lead to brake failure which could result in death or serious injury

### CAUTION

To avoid leakage after assembly, verify that banjo washers, banjo bolt, hydraulic brake line and bore of master cylinder are completely clean.

3. See Figure 2-78. Connect brake line (3) to master cylinder (4) with two **new** banjo washers (2) and banjo bolt (1) (metric). Tighten to 16-20 **ft-lbs** (21.7-27.1 Nm).

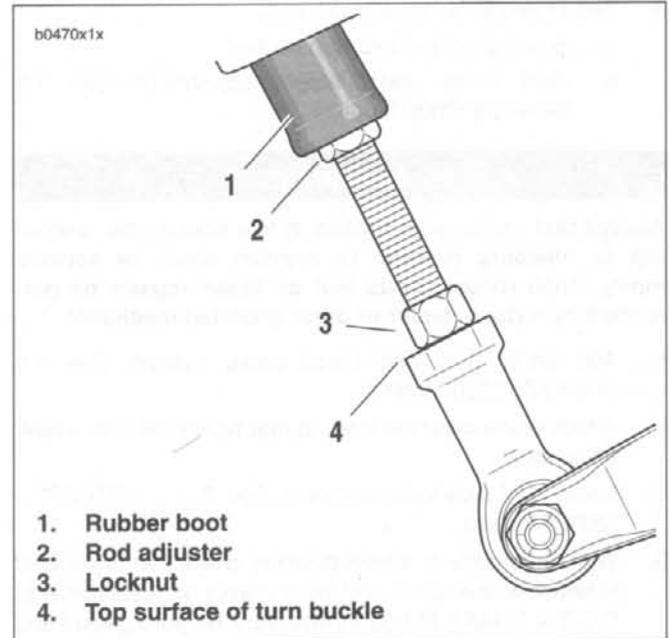


Figure 2-79. Brake Push Rod

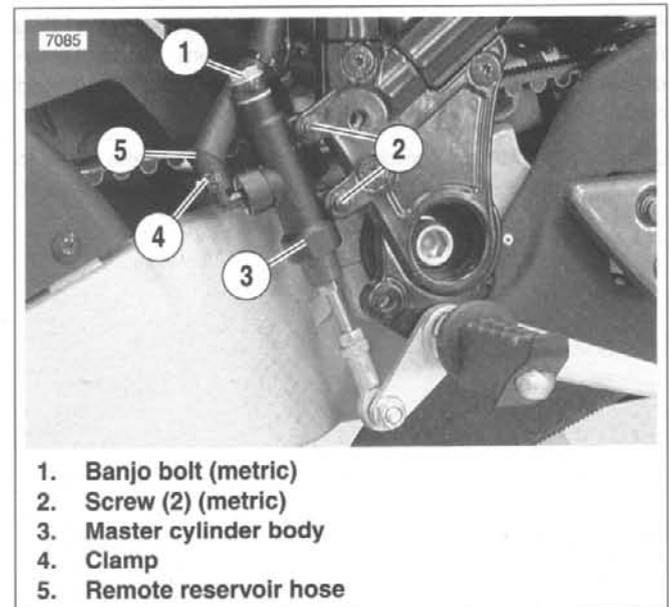


Figure 2-80. Master Cylinder Mounting

4. See Figure 2-79. Install push rod.
  - a. Screw push rod into turn buckle.
  - b. Seat brake pedal height adjustment. See 1.9 BRAKES (2000 Models).

**WARNING**

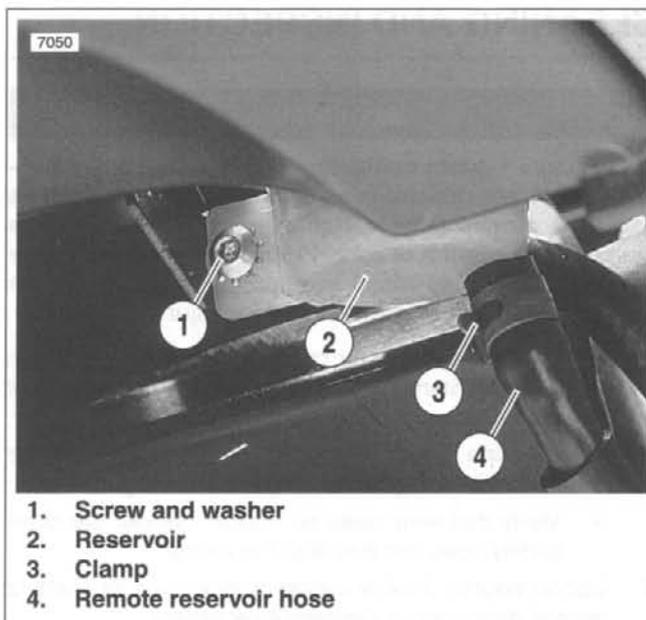
Always test motorcycle brakes at low speed after servicing or bleeding system. To prevent death or serious injury, Buell recommends that all brake repairs be performed by a Buell dealer or other qualified mechanic.

5. Add brake fluid and bleed brake system. See 1.9 BRAKES (2000 Models).
6. Attach brake reservoir hose to rear brake line with a new cable strap.
7. Install right side footrest mount. See 2.37 FOOTRESTS (2000 Models).
8. With motorcycle in a level position, check that brake fluid is between the upper and lower marks on reservoir. Add D.O.T. 4 BRAKE FLUID if necessary. Be sure gasket and cap on reservoir fit securely.

**WARNING**

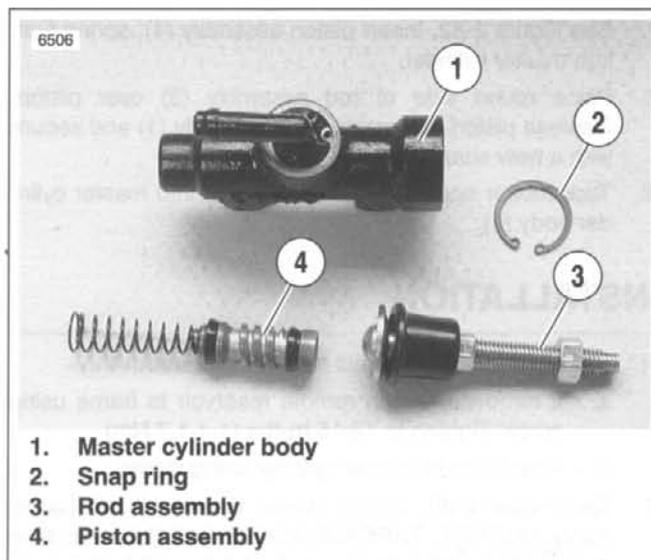
Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.

9. Turn ignition key switch to IGN. Apply rear brake pedal to test brake lamp operation. Turn ignition key switch to LOCK.



1. Screw and washer
2. Reservoir
3. Clamp
4. Remote reservoir hose

Figure 2-81. Remote Reservoir



1. Master cylinder body
2. Snap ring
3. Rod assembly
4. Piston assembly

Figure 2-82. Master Cylinder Internals

## REMOVAL

### NOTE

Steps 1 and 2 are not required for detaching caliper from rotor. Drain fluid only when disassembling caliper.

1. Drain and discard brake fluid. See Step 1 (Removal) in 2.21 REAR BRAKE MASTER CYLINDER (2000 models).

### CAUTION

Damaged banjo bolt seating surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

2. See Figure 2-83. Remove banjo bolt (2) (metric) and two banjo washers (3) to disconnect brake line (1) from caliper. Discard banjo washers.
3. Remove small screw (6) (metric) and large screw (7) (metric) to detach caliper from mount.
4. See Figure 2-84. Remove clip (1) from rear caliper mount (2) if necessary.

## DISASSEMBLY

1. See Figure 2-83. Remove pin plug and pad hanger (5) (metric) to free brake pads.
2. See Figure 2-85. Remove clip (1) from caliper body.
3. See Figure 2-86. Remove piston (3) using BRAKE CALIPER PISTON REMOVER (1) (Part No. B-42887) with adaptor (2).
4. Remove two O-rings from groove in caliper bore. Discard O-rings.

## CLEANING AND INSPECTION

### WARNING

Clean brake system components using denatured alcohol. Do not use mineral-base cleaning solvents, such as gasoline or paint thinner. Use of mineral-base solvents causes deterioration of rubber parts that continues after assembly. This may result in improper brake operation which could result in death or serious injury.

1. Clean all parts with denatured alcohol or D.O.T. 4 BRAKE FLUID. Do not contaminate with mineral oil or other solvents. Wipe dry with a clean, lint free cloth. Blow out drilled passages and bore with a clean air supply. Do not use a wire or similar instrument to clean drilled passages.

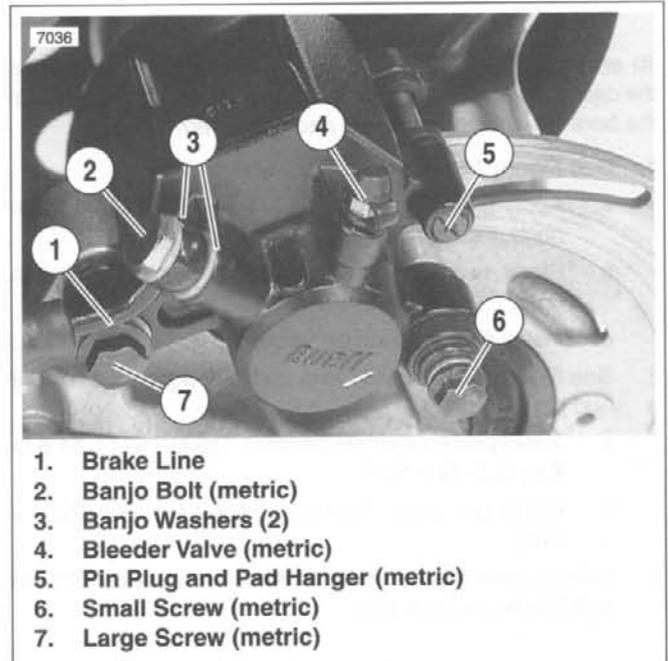


Figure 2-83. Rear Brake Caliper

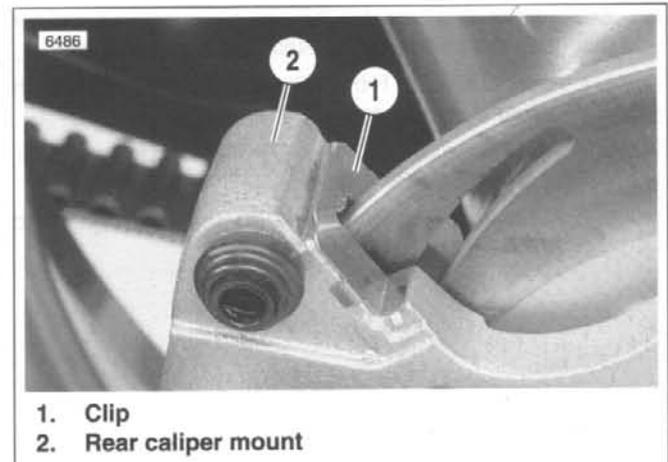


Figure 2-84. Caliper Mount Clip

2. Carefully inspect all components. Replace any parts that appear damaged or worn. Do not hone caliper piston bore.

### WARNING

Always replace brake pads in complete sets for correct brake operation. Never replace just one brake pad. Failure to install brake pads as a set could result in death or serious injury.

3. Inspect brake rotor and pads. See 1.10 BRAKE PADS AND ROTORS (2000 MODELS).

## ASSEMBLY

1. See Figure 2-85. Place clip (1) inside caliper body as shown.

### NOTE

To ensure proper brake pad-to-brake rotor clearance when the caliper is installed, piston must be pressed all the way into the bore whenever **new** brake pads are used.

2. See Figure 2-86. Install pistons and O-rings.
  - a. Apply a light coat of D.O.T. 4 BRAKE FLUID to O-rings, piston and caliper piston bore.
  - b. Place two **new** O-rings inside grooves of piston bore.
  - c. Install piston (3) inside caliper body.
3. See Figure 2-85. Install brake pads (3) using pad hanger and pin plug (2).
  - a. Install pad hanger pin (metric). Tighten to 11-14.5 ft-lbs (14.7-19.6 Nm).
  - b. Install pin plug. Tighten to 1.5-2.1 ft-lbs (2.0-2.9 Nm).
4. Install a **new** bleeder valve (metric) if necessary. Tighten to 3-5 ft-lbs (4.1-6.8 Nm).

## INSTALLATION

1. See Figure 2-84. Install caliper mount clip (1) if removed.
2. See Figure 2-83. Install caliper assembly on caliper mount. Brake pad surfaces must face rear brake rotor.
  - a. Apply LOCTITE THREADLOCKER 272 (red) to both caliper mounting screws (6, 7) (metric).
  - b. Install large caliper screw (7) (metric). Tighten to 18-22 ft-lbs (24.4-29.8 Nm)
  - c. Install small caliper screw (6) (metric). Tighten to 14.5-18 ft-lbs (19.6-24.4 Nm).

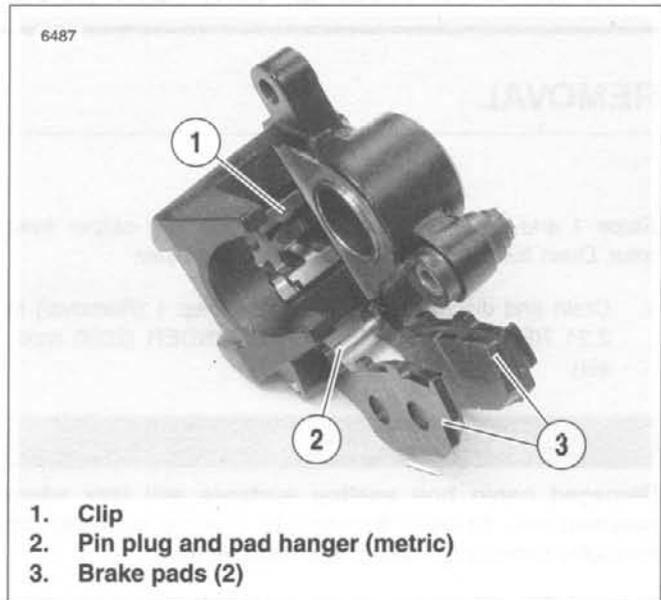


Figure 2-85. Brake Pads

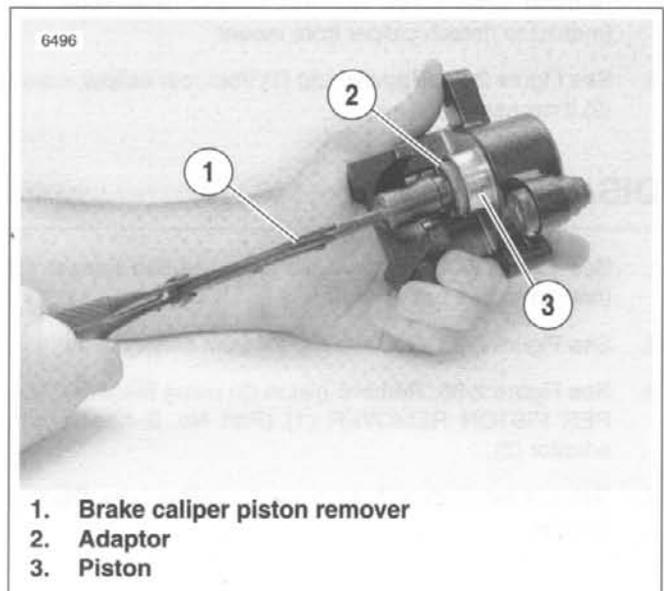


Figure 2-86. Removing Rear Brake Caliper Piston

**⚠ WARNING**

Use only new black banjo washers (See Parts Catalog for Part No.) with D.O.T. 4 brake fluid. Earlier silver banjo washers are not compatible with D.O.T. 4 fluid and will not seal properly over time. Failure to comply may adversely affect braking ability and lead to brake failure which could result in death or serious injury

**CAUTION**

To avoid leakage, verify that gaskets, banjo bolt, hydraulic brake line and caliper bore are completely clean.

3. Connect brake line (1) to caliper using two new banjo washers (3) and banjo bolt (2) (metric). Tighten to 16-20 ft-lbs (21.7-27.1 Nm).

**⚠ WARNING**

Always test motorcycle brakes at low speed after servicing or bleeding system. To prevent death or serious injury, Buell recommends that all brake repairs be performed by a Buell dealer or other qualified mechanic.

4. Depress rear brake pedal several times to set brake pads to proper operating position within caliper. Bleed brake system. See 1.9 BRAKES (2000 Models).
5. See Figure 2-87. Verify proper fluid level in reservoir.

**⚠ WARNING**

Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.

6. Turn ignition key switch to IGN. Apply brake pedal to test brake lamp operation. Turn ignition key switch to LOCK.

**NOTE**

Avoid making hard stops for the first 100 miles (160 km) to allow new brake pads to "wear in" properly with the brake rotor.

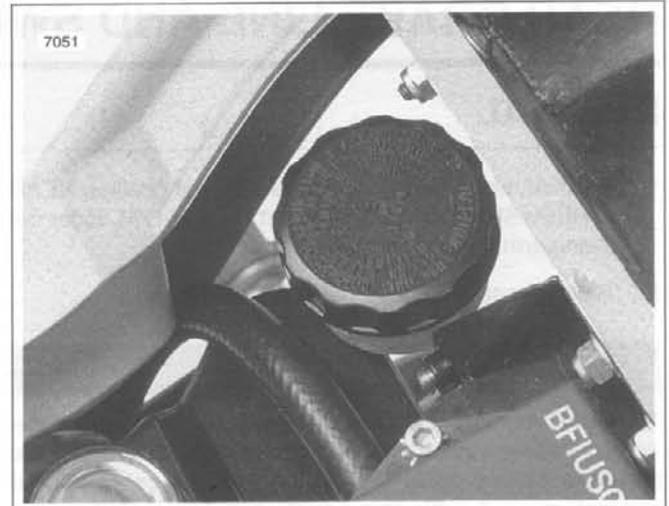


Figure 2-87. Rear Reservoir

## REMOVAL

1. Position motorcycle on a suitable lift and position REAR WHEEL SUPPORT STAND (Part No. B41174) under the swing arm. Secure motorcycle to lift.
2. Remove seat. See 2.49 SEAT (2000 Models).

### WARNING

To avoid accidental start-up of vehicle, disconnect the battery cables before proceeding. Always disconnect the negative battery cable first. If the positive cable should contact ground with the negative cable installed, the resulting sparks may cause a battery explosion, which could result in death or serious injury.

3. Disconnect both battery cables from battery, negative (-) cable first. See 1.5 BATTERY (2000 MODELS).
4. Cut cable tie holding oxygen sensor connector to battery strap. Remove battery strap and battery.
5. Remove rear brake fluid reservoir cap and drain brake fluid from rear brake system into suitable container. See Step 1 (Removal) in 2.21 REAR BRAKE MASTER CYLINDER (2000 models).
6. Remove two top bolts from oil tank.
7. See Figure 2-89. Cut two cable ties holding rear brake reservoir hose to rear brake line above rear master cylinder on right side of motorcycle.
8. See Figure 2-90. Disconnect two wires from rear brake light switch.

### CAUTION

Damaged banjo bolt seating surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

9. Remove rear master cylinder banjo bolt and two banjo washers. Discard banjo washers.
10. See Figure 2-88. Remove rear brake caliper banjo bolt and two banjo washers. Discard banjo washers.
11. Carefully push up on bottom of oil tank to allow rear brake line tangs to be freed from studs on the bottom of the oil tank.
12. See Figure 2-91. Cut cable tie on wiring harness and cable tie on vent tube on left side of bike.
13. Slide rear brake line into area where battery usually sits and then off of bike through left side of frame.

### NOTE

If replacing rear brake light switch, place brake line in vise gently (securing hexagonal rear brake light switch fitting) to prevent bending brake line while removing or installing rear brake lamp switch.

14. See Figure 2-90. Remove rear brake light switch from brake line.

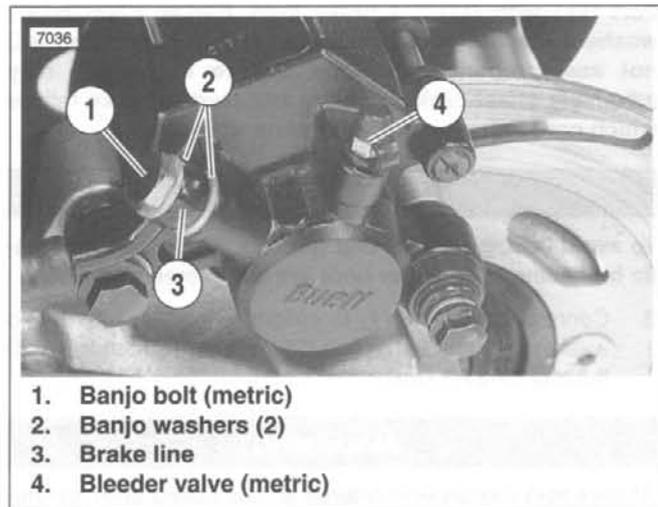


Figure 2-88. Rear Brake Caliper Banjo Bolt

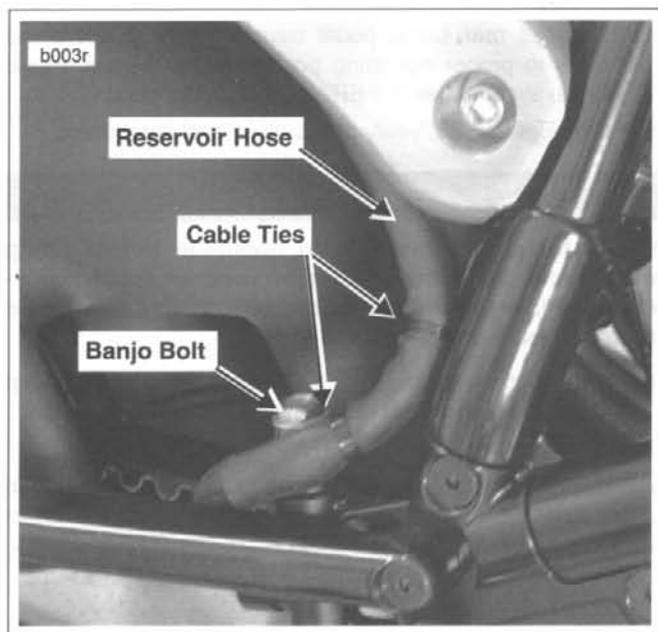


Figure 2-89. Rear Master Cylinder Banjo Bolt

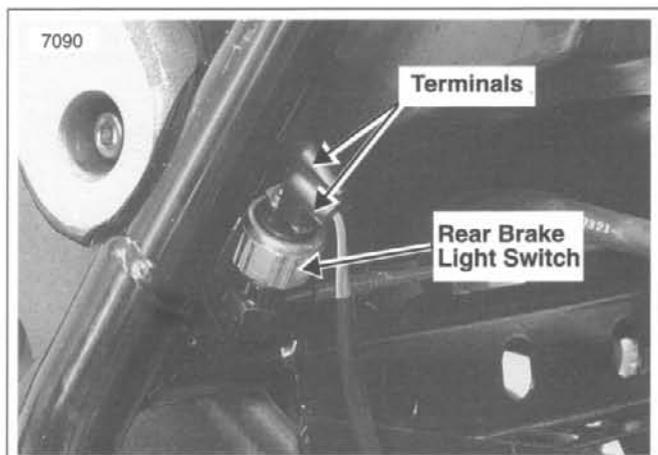


Figure 2-90. Rear Brake Light Switch

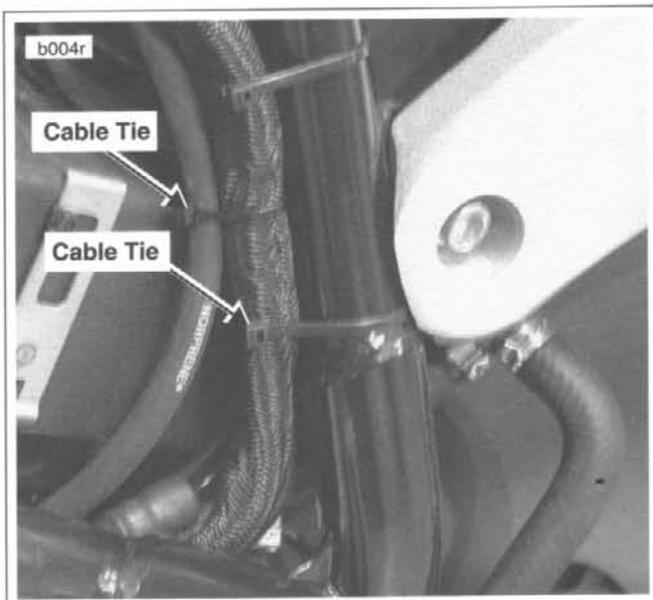


Figure 2-91. Rear Brake Line - Left Side

## INSTALLATION

### **⚠ WARNING**

If rear brake line must be replaced, use only the brake line with the olive drab coating on the metal portion of the line (See Parts Catalog for Part No.) with DOT 4 brake systems. The previous black metal brake line is **NOT** compatible with DOT 4 brake fluid. Failure to comply may adversely affect braking ability and lead to brake failure which could result in death or serious injury.

### NOTE

If replacing rear brake light switch, place brake line in vise gently (securing hexagonal rear brake light switch fitting) to prevent bending brake line while removing or installing rear brake lamp switch.

- Coat threads of rear brake lamp switch with LOCTITE PIPE SEALANT WITH TEFLON and install to brake line. Tighten switch to 84-96 in-lbs (9.5-10.8 Nm). Tighten as required to orient terminals perpendicular to brake line.
- Remove frame side fasteners from rear tie bar (locknut, washer and bolt). Discard locknut. NOTE: Using a 3 inch extension and deep well swivel socket simplifies removal of the tie bar fasteners.
- See Figure 2-92. Working from the right side, install brake line and align metal portion of brake line with rear master cylinder. Route caliper side of brake line in front of tie bar and through rear fender opening to rear caliper.
- Carefully push up on bottom of oil tank and position rear brake line tangs under studs on the bottom of the oil tank. Lower oil tank allowing studs to engage pockets in frame.
- See Figure 2-93. Install loop cushioned clamp to brake line and then to bolt side of tie bar fasteners. Loop clamp is oriented down and to the left. Install tie bar to frame with bolt, washer and loop cushioned clamp on lower side of tie bar and **new** locknut on upper side of tie bar. Tighten to 30-33 ft-lbs (40.7-44.7 Nm).
- Install rear master cylinder banjo bolt with **new** banjo washers and torque to 16-20 ft-lbs (21.7-27.1 Nm).
- Install rear caliper banjo bolt with **new** banjo washers and torque to 16-20 ft-lbs (21.7-27.1 Nm). NOTE: Removing inner fender TORX screw and plastic washer will assist in tightening banjo bolt. If TORX screw and plastic washer are removed, tighten to 72-96 in-lbs (8.1-10.8 Nm) when installing.
- See Figure 2-89. Install two cable ties (thick) to reservoir hose and rear brake line in **two** locations as shown in figure. Use care to avoid pinching hose.
- Install top two bolts to oil tank. Tighten bolts to 10-12 in-lbs (1.1-1.4 Nm).
- See Figure 2-91. Cable tie vent hose and wire harness to frame on left side of motorcycle. NOTE: Use thick cable tie on wire harness and thin cable tie on vent hose. Use care to avoid pinching hose.

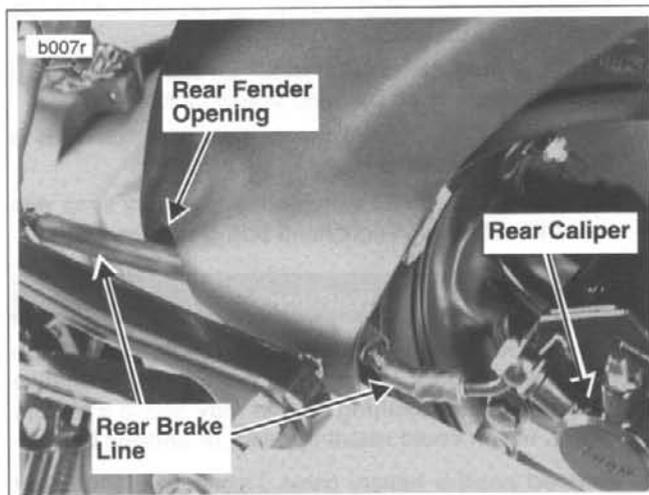


Figure 2-92. Rear Brake Line Routing

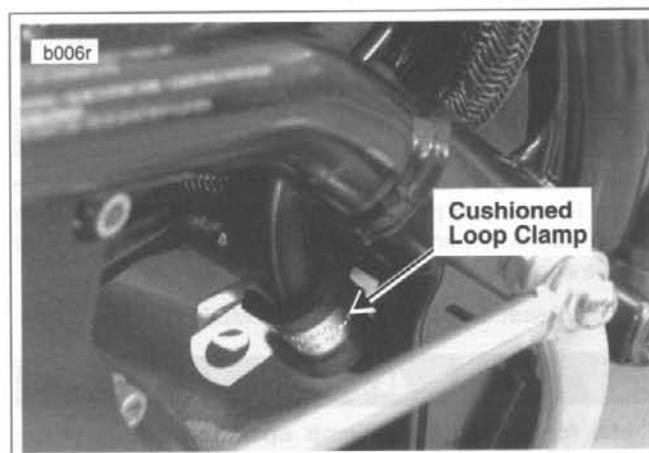


Figure 2-93. Loop Clamp Orientation Before Installation

### **⚠ WARNING**

Use only new black banjo washers (See Parts Catalog for Part No.) with D.O.T. 4 brake fluid. Earlier silver banjo washers are not compatible with D.O.T. 4 fluid and will not seal properly over time. Failure to comply may adversely affect braking ability and lead to brake failure which could result in death or serious injury

11. Install battery with strap and nut. Tighten nut to 40 **in-lbs** (4.5 Nm).
12. Attach oxygen sensor connector to battery strap with **new** thin cable tie on left hand side of motorcycle.
13. See Figure 2-90. Connect rear brake light switch wires to rear brake light switch.
14. Attach rear brake light switch wires to battery strap with **new** thin cable tie on right hand side of motorcycle.

**⚠ WARNING**

**Always connect the positive battery cable first. If the positive cable should contact ground with the negative cable installed, the resulting sparks may cause a battery explosion, which could result in death or serious injury.**

15. Connect positive battery cable. Tighten to 60-96 **in-lbs** (6.8-10.9 Nm).
16. Connect negative battery cable. Tighten to 60-96 **in-lbs** (6.8-10.9 Nm).
17. Bleed rear brake system and install reservoir cap. See 1.9 BRAKES (2000 Models)

**⚠ WARNING**

**After installing seat, pull upward on front of seat to be sure it is locked in position. If seat is loose, it could shift during vehicle operation resulting in loss of control of vehicle and death or serious injury.**

18. Install seat. See 2.49 SEAT (2000 Models).

**⚠ WARNING**

**Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.**

19. Turn ignition key ON, depress rear brake pedal and check for proper brake light operation.

**⚠ WARNING**

**After completing repairs or bleeding the system, always test motorcycle brakes at low speed. If brakes are not operating properly or braking efficiency is poor, testing at high speeds may result in death or serious injury.**

20. Test ride motorcycle and check for proper brake operation.

GENERAL

The following information is intended to provide a general overview of the project and its objectives. It is not intended to be a substitute for the detailed technical specifications and drawings provided elsewhere in this document.

GENERAL

The following information is intended to provide a general overview of the project and its objectives. It is not intended to be a substitute for the detailed technical specifications and drawings provided elsewhere in this document.

CHARACTERISTICS

The following information is intended to provide a general overview of the project and its objectives. It is not intended to be a substitute for the detailed technical specifications and drawings provided elsewhere in this document.

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## GENERAL

The front fork consists of two telescoping outer tube/inner slider assemblies. Each assembly has an internal compression spring which supports the forward weight of the vehicle and rider. The compression spring extends and retracts to cushion the ride over rough or irregular road surfaces. An oil filled damping mechanism controls the telescoping action of each tube/slider assembly.

See 1.17 SUSPENSION for more information.

## REMOVAL

1. Raise front wheel off floor using procedure under 1.19 STEERING HEAD BEARINGS.
2. Detach front brake caliper from rotor. See 2.12 FRONT BRAKE CALIPER (1999 Models) or 2.19 FRONT BRAKE CALIPER (2000 Models)
3. Remove front wheel. See 2.5 FRONT WHEEL (1999 Models) or 2.6 FRONT WHEEL (2000 Models)
4. Remove front fender. See 2.39 FRONT FENDER.
5. Loosen left and right headlamp brackets.
6. Loosen the four large pinch screws on both the upper and lower triple clamps.
7. Remove front forks through bottom of triple clamps.

## DISASSEMBLY

### NOTE

To prevent change in set position of damping force adjuster needle, do not loosen the lock nut.

1. See Figure 2-94. Loosen the fork bolt (1) (metric) from the outer tube and slightly compress the fork leg. Remove the fork bolt with attached O-ring (2).
2. See Figure 2-95. Set the FRONT FORK SPRING COMPRESSOR (Part No. B-43875) (1) onto the spring collar (2). Push down on the collar and remove the spring seat stopper (3).
3. See Figure 2-96. Remove the spring collar (4), the spring joint (5) and the spring (7).
4. Remove the fork oil by pumping the fork leg and rod 8-10 times until the rod moves freely.
5. Clamp the axle holder in a vise with soft jaws or use a shop towel. Remove the center bolt (19) (metric) and the special washer (18).

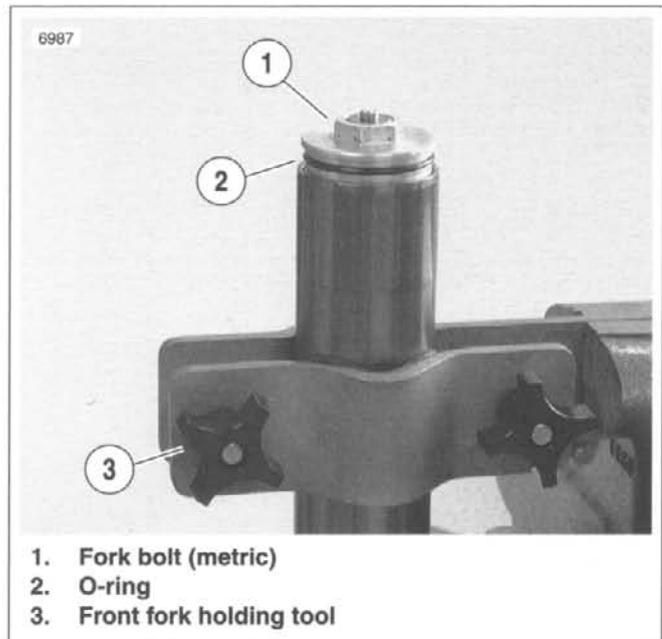


Figure 2-94. Fork Bolt

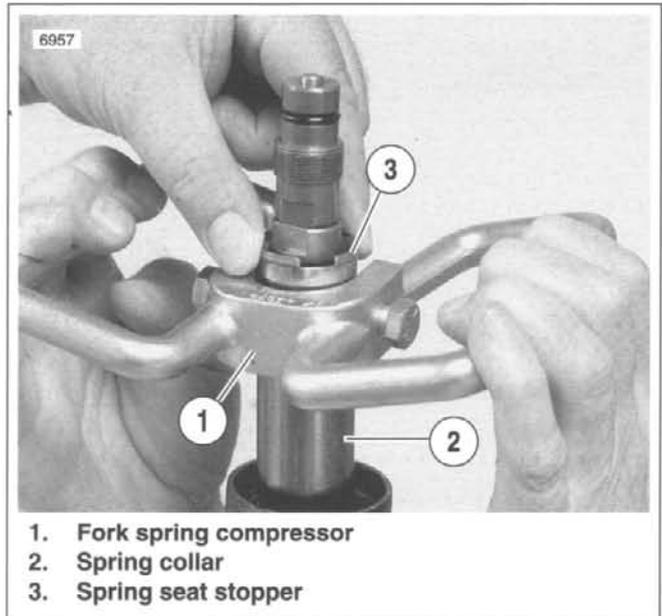
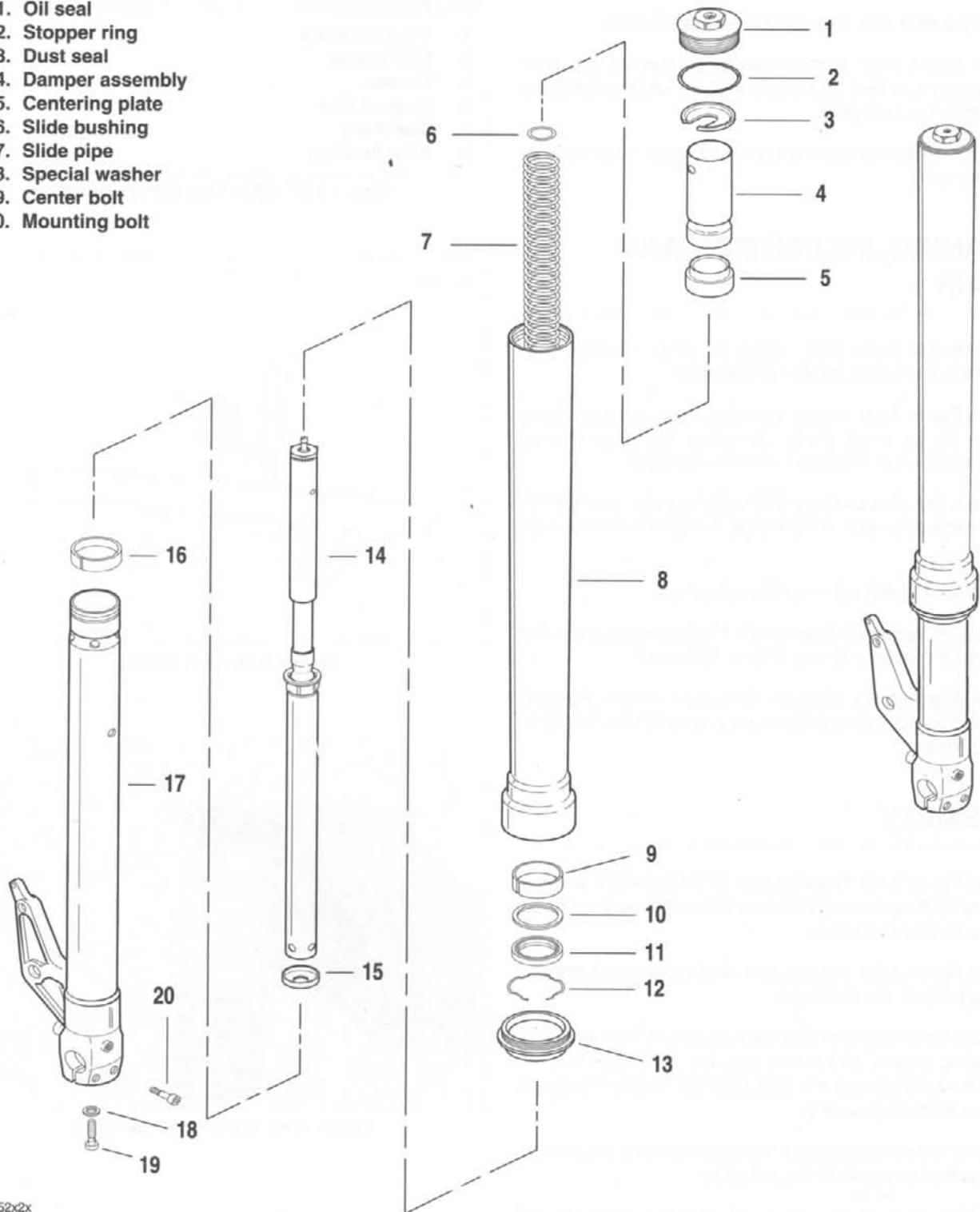


Figure 2-95. Front Fork Spring Compressor

1. Fork bolt
2. O-ring
3. Spring seat stopper
4. Spring collar
5. Spring joint
6. O-ring
7. Spring
8. Outer tube
9. Guide bushing
10. Seal spacer
11. Oil seal
12. Stopper ring
13. Dust seal
14. Damper assembly
15. Centering plate
16. Slide bushing
17. Slide pipe
18. Special washer
19. Center bolt
20. Mounting bolt



b0652x2x

Figure 2-96. Front Fork Assembly

- Remove the damper (14) and the centering plate (15) from the slide pipe (17).

### ⚠ WARNING

Be careful not to scratch the slide pipe or the outer tube. Improperly operating forks may lead to a loss of control and death or serious injury.

- Remove the dust seal (13) and the stopper ring (12) from the outer tube (8).
- Pull the slide pipe (17) out of the outer tube (8).
- See Figure 2-97. Remove the guide bushing (1), seal spacer (2), oil seal (3) stopper ring (4), and the dust seal (5) from the slide pipe.
- Remove the slide bushing (6) by prying the slide bushing at the split.

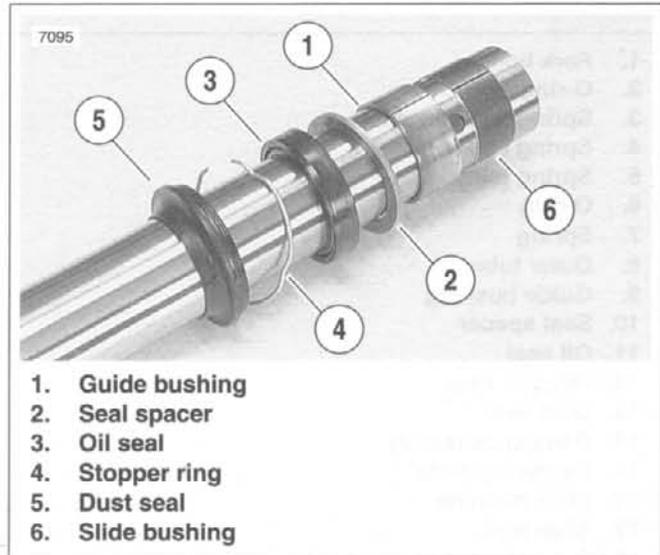


Figure 2-97. Slide Pipe Components

## CLEANING, INSPECTION AND REPAIR

- Thoroughly clean and inspect all parts. Replace any parts that are bent, broken or damaged.
- See Figure 2-96. Check the slide pipe (17) and outer tube (8) for score marks, scratches and excessive or abnormal wear. Replace if worn or damaged.
- Check the slide bushing (16) and the guide bushing (9) for excessive wear or scratches. Replace if damaged or worn.
- Replace the stopper ring (12) if distorted.
- Measure spring (7) free length. Replace springs shorter than service wear limit of 9.13 in. (232 mm).
- See Figure 2-98. Measure slide pipe runout. Replace pipe if runout exceeds the service wear limit of 0.008 in. (0.2 mm).

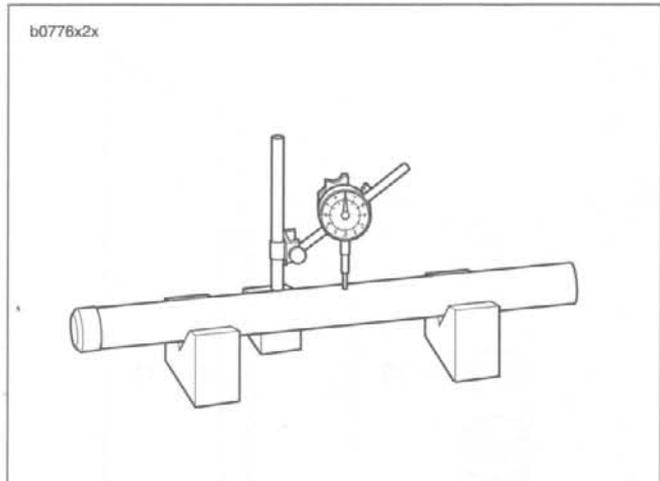


Figure 2-98. Pipe Runout

## ASSEMBLY

- See Figure 2-99. Wrap the end of the slide pipe and the slide bushing channel with tape to avoid damaging the oil seal lip when installing.
- See Figure 2-97. Install a **new** dust seal (5) and stopper ring (4) onto the slide pipe.
- Coat the sealing lips of the **new** oil seal (3) with fork oil or sealing grease and install onto the slide pipe with its marked side facing the dust seal (5). Remove the tape from the slide pipe end.
- Install the seal spacer (2), the guide bushing (1) and the slide bushing (6) onto the slide pipe.
- Coat the slide bushing (6) and the guide bushing (1) with fork oil.

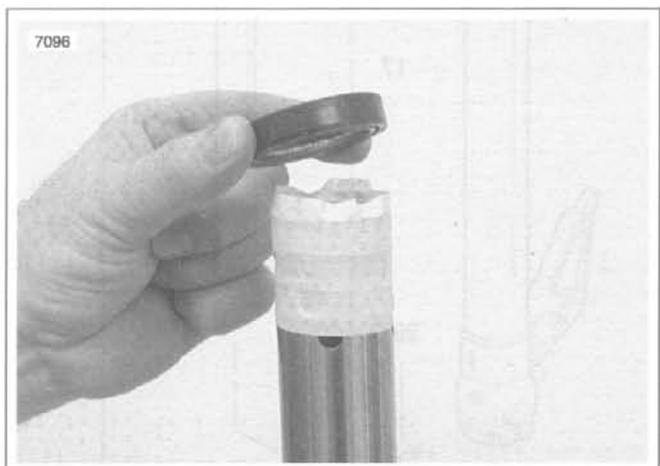


Figure 2-99. Slide Pipe Protection

### CAUTION

The outer tube can move freely up and down on the slide pipe. Always hold both the slide pipe and outer tube to prevent damage to bushings and seals.

6. See Figure 2-96. Carefully place the slide pipe (17) into the outer tube (8).
7. Move and tape or tie the dust seal (13) and stopper ring (12) out of the way.
8. Using FORK SEAL DRIVER (Part No. B-43721), drive the guide bushing (9) with the seal spacer (10) and oil seal (11) into position in the outer tube (4). See Figure 2-100.
9. See Figure 2-96. Remove any tape or ties and reinstall the stopper ring (12) and a **new** dust seal (13).
10. Place the centering plate (15) onto the damper (14) and insert the assembly into the slide pipe (17).
11. Clamp the axle holder in a vise with soft jaws or use a shop towel. Replace the special washer (18) and center bolt (19) (metric). Tighten the center bolt to 22-29 ft-lbs (29.8-39.3 Nm).

### NOTE

The recommended fork oil is hydraulic fork oil Type "E".

12. While supporting the fork, pour one-half of the recommended amount of fork oil, 8 oz. (225 cc), into the fork pipe.
13. Pump the piston rod and leg slowly at least 10 times, about 6 in. (150 mm) strokes.
14. Place the piston rod and outer tube (8) in the full bottomed position.
15. See Figure 2-101. Pour the recommended fork oil into the slide pipe to a level between the maximum and minimum limits. Additional information on setting oil levels can be found under 1.18 FRONT FORK OIL.
16. See Figure 2-102. Install the spring, with the taper side at top, and the spring collar and spring joint.
17. See Figure 2-95. Place FRONT FORK SPRING COMPRESSOR (1) into position and press down on the spring collar (2).
18. Set the spring seat stopper (3) between the spring collar (2) and the locknut. Remove the FRONT FORK SPRING COMPRESSOR.
19. See Figure 2-94. Apply oil to a **new** O-ring and install it into position on the fork bolt. Install fork bolt. Tighten to 22-29 ft-lbs (29.8-39.3 Nm).
20. Tighten rebound adjuster against the fork bolt.
21. Set rebound and compression adjusters to factory positions. See 1.17 SUSPENSION.

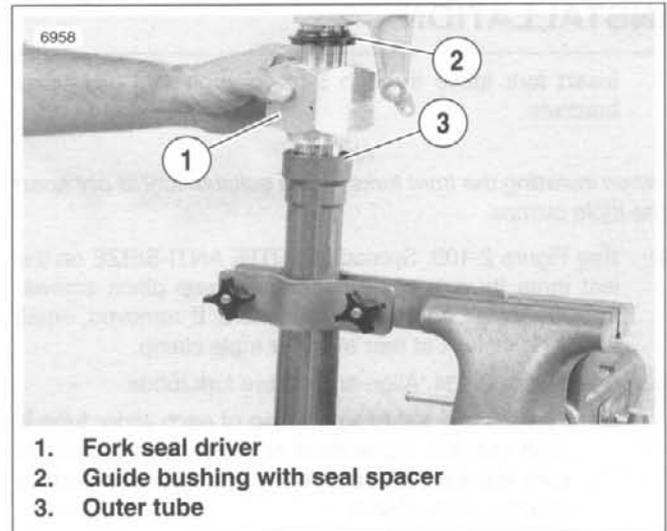


Figure 2-100. Fork Seal Driver

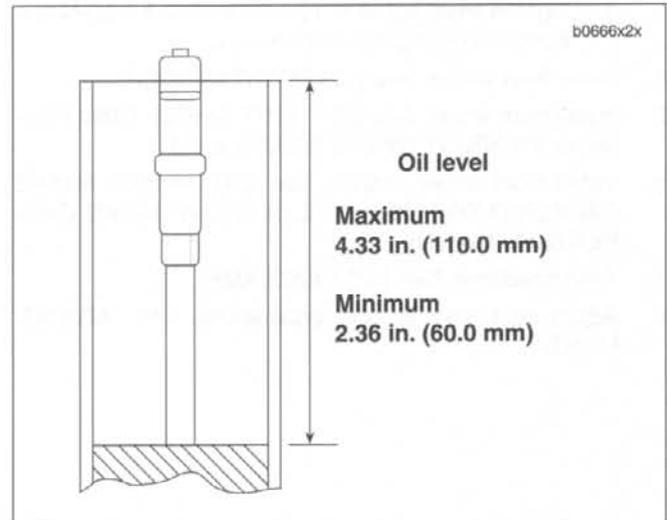


Figure 2-101. Oil Level Measurement

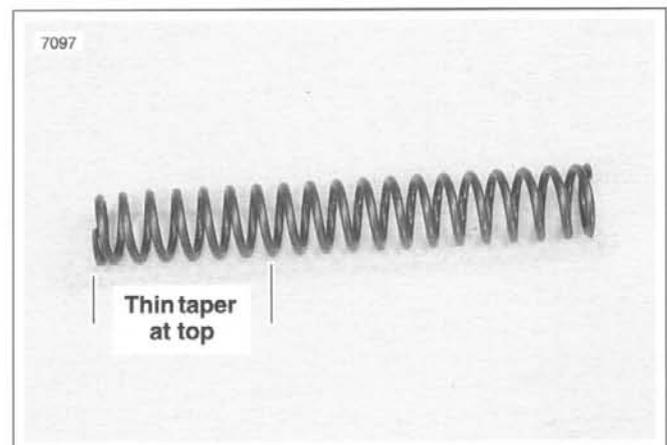


Figure 2-102. Spring Installation

## INSTALLATION

1. Insert fork tubes through triple clamps and headlamp brackets.

### NOTE

When installing the front forks, use a suitable tool to pry apart the triple clamps.

2. See Figure 2-103. Spread LOCTITE ANTI-SEIZE on the last three threads of all five triple clamp pinch screws. Loosely install triple clamp fasteners. If removed, small screw (1) installs at rear of upper triple clamp.
3. See Figure 2-104. Align and secure fork tubes.
  - a. Position fork tubes so that top of each slider tube is flush with the top surface of upper triple clamp. Be sure that top surface of fork is not below top surface of upper triple clamp.
  - b. Position top of headlamp brackets 2.0 in. (50.8 mm) below upper triple clamp.
  - c. Tighten large screws to 18-20 ft-lbs (24.4-27.1 Nm).
  - d. Tighten small screw to 10-12 ft-lbs (13.6-16.3 Nm) if loosened during fork stem service.
4. Install front fender. See 2.39 FRONT FENDER.
5. Install front wheel. See 2.5 FRONT WHEEL (1999 Models) or 2.6 FRONT WHEEL (2000 Models).
6. Install front brake caliper. See 2.12 FRONT BRAKE CALIPER (1999 Models) or 2.19 FRONT BRAKE CALIPER (2000 Models).
7. Align headlamp. See 1.25 HEADLAMP.
8. Adjust front forks to rider preferences. See ADJUSTMENT.

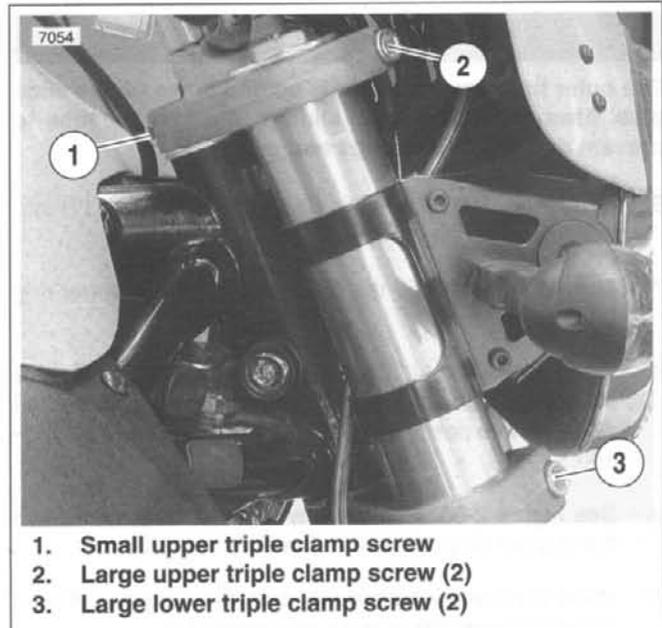


Figure 2-103. Front Fork Fasteners

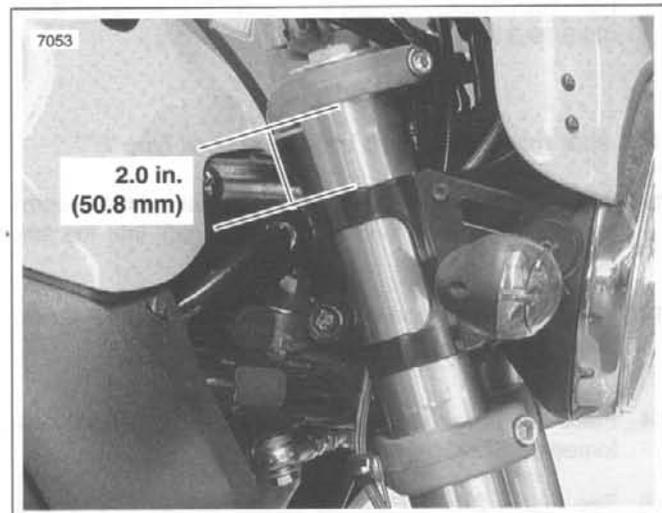


Figure 2-104. Aligning Front Forks

## REMOVAL/DISASSEMBLY

1. Remove steering head lock. See 2.26 STEERING HEAD LOCK.
2. Remove fork assemblies. See 2.24 FRONT FORK.
3. Detach instrument support and handlebars. See 2.33 INSTRUMENT SUPPORT.
4. See Figure 2-105. Remove all upper triple clamp screws (7, 11), fork stem bolt (1) and upper triple clamp (2).
5. Remove upper dust shield (3) and roller bearing (4).
6. Remove lower roller bearing.
  - a. Remove two lower triple clamp screws (7). Pull the lower triple clamp (6) downward.
  - b. The lower bearing cone is a press fit on fork stem. Chisel through outer bearing cage to allow rollers to fall free.
  - c. Apply heat to remove the remaining portion of bearing cone. Continuously move flame around its entire circumference until bearing falls free.
  - d. Remove lower dust shield (3).
7. If replacement of bearing cups (5) is necessary, drive cups from steering head using STEERING HEAD BEARING RACE REMOVER (Part No. HD-39301A) and UNIVERSAL DRIVER HANDLE (Part No. HD-33416).

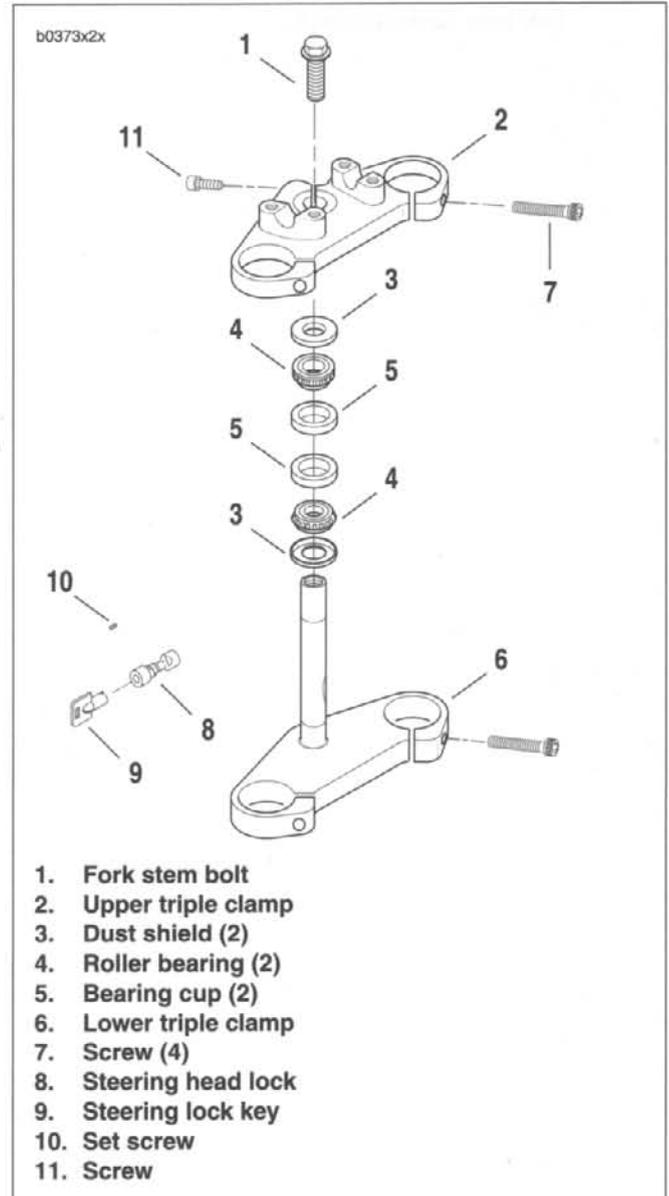
## CLEANING, INSPECTION AND REPAIR

See 1.17 SUSPENSION for adjustment procedures.

1. See Figure 2-105. Clean the dust shields (3), bearing cups (5), fork stem and lower triple clamp (6) and frame with solvent.
2. Carefully inspect bearing races and assemblies for pitting, scoring, wear and other damage. Replace damaged bearings (4) as a set (3, 4 and 5).
3. Check the fork stem and lower triple clamp (6) for damage. Replace if necessary.

## ASSEMBLY/INSTALLATION

1. See Figure 2-106. If removed, install **new** bearing cups into frame steering head using STEERING HEAD BEARING RACE INSTALLER (Part No. HD-39302).
2. See Figure 2-105. Liberally coat the bearing cones (4) with grease using WHEEL BEARING PACKER TOOL (Part No. HD-33067). Work the grease into the rollers.
3. Install lower bearing.
  - a. Place lower bearing dust shield (3) over fork stem.
  - b. Find a section of pipe having an inside diameter slightly larger than the outside diameter of the fork stem.



1. Fork stem bolt
2. Upper triple clamp
3. Dust shield (2)
4. Roller bearing (2)
5. Bearing cup (2)
6. Lower triple clamp
7. Screw (4)
8. Steering head lock
9. Steering lock key
10. Set screw
11. Screw

Figure 2-105. Fork Stem

- c. Press bearing (4) with small end up onto fork stem and lower triple clamp (6). Use the pipe as a press-on tool.
4. Insert lower triple clamp (6) through the steering head. Install the upper bearing (4) with small end down and dust shield (3) onto fork stem.
5. See Figure 2-107. Apply LOCTITE ANTI-SEIZE to fork stem bolt (1). Loosely install upper triple clamp (2) using fork stem bolt.
6. Install fork assemblies. See 2.24 FRONT FORK.
7. Install steering head lock. See 2.26 STEERING HEAD LOCK.
8. Install instrument support and handlebars. See 2.33 INSTRUMENT SUPPORT.
9. Check adjustment.

- a. Tighten fork stem bolt (1). Check bearing adjustment to set fork stem bolt to proper tension. See 1.19 STEERING HEAD BEARINGS.
- b. Make sure the fork stem turns freely, then tighten the fork stem clamp screw (3).

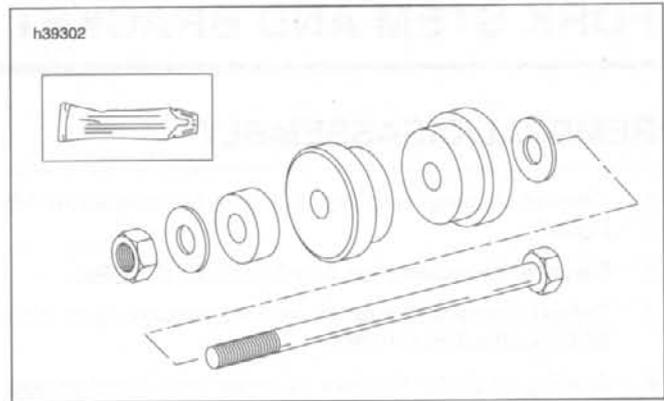


Figure 2-106. Steering Head Bearing Race Installer

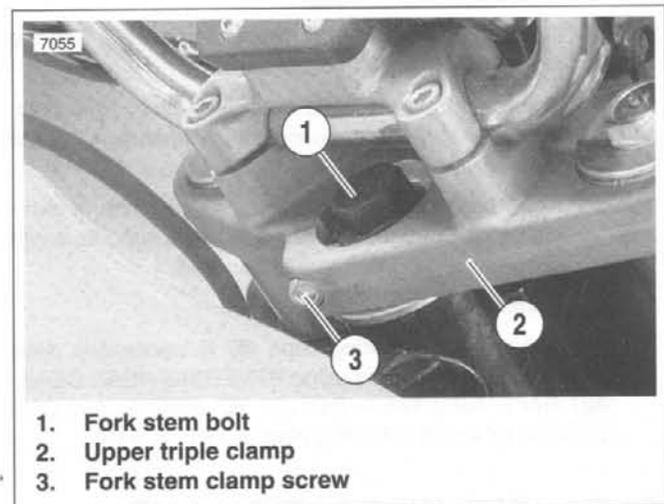


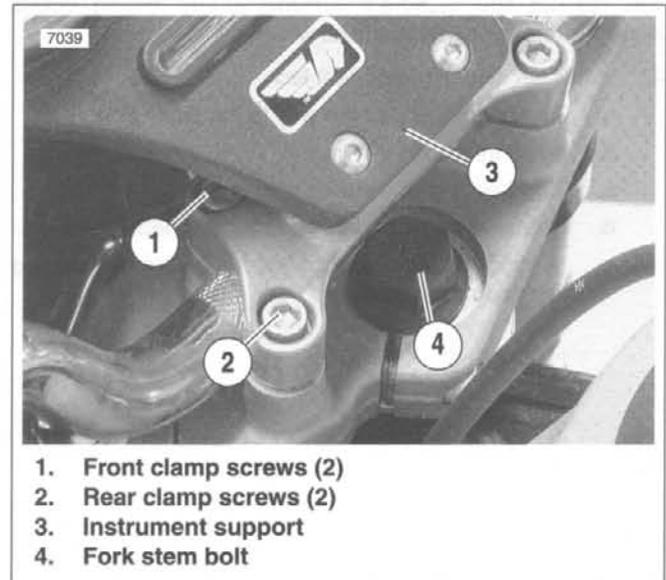
Figure 2-107. Fork Stem Clamp Screw

## REMOVAL

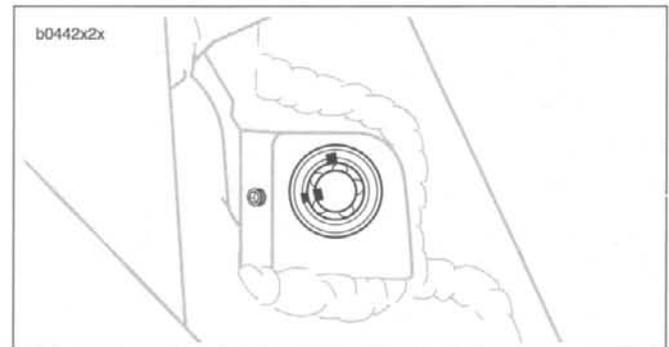
**NOTE**

*Steering head lock is not repairable. Replace the unit if it fails.*

1. Raise front wheel off floor using procedure under 1.19 STEERING HEAD BEARINGS.
2. Remove four screws and washers to detach windscreen.
3. Loosen handlebars.
  - a. Place protective cloth over fuel tank cover and headlamp.
  - b. See Figure 2-108. Remove the two front clamp screws (1).
  - c. Remove both rear clamp screws (2) and instrument support (3).
  - d. Place handlebar assembly on headlamp without stretching the attached cables.
4. Loosen the three upper triple clamp screws.
5. See Figure 2-108. Slowly loosen fork stem bolt (4) until forks drop 0.5 in. (12.7 mm) in triple clamps.
6. See Figure 2-109. Remove set screw behind lock.
7. Extract steering head lock from fork stem.
  - a. Insert fork key in lock.
  - b. Lift front wheel upward.
  - c. Twist key to pull steering head lock from fork stem.
  - d. Release front wheel.



**Figure 2-108. Loosening Handlebars**



**Figure 2-109. Set Screw**

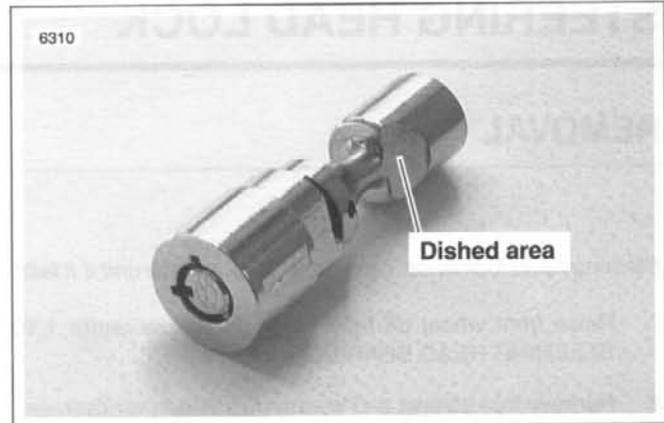
## INSTALLATION

1. Install steering head lock in fork stem.
  - a. See Figure 2-110. Dished area of steering head lock faces front wheel.
  - b. Lift front wheel upward.
  - c. See Figure 2-109. Lock must be in the unlocked position to install. Insert lock with key openings positioned as shown.
  - d. Release front wheel.
2. Install and adjust handlebars. See 1.24 HANDLEBARS.
3. See Figure 2-108. Tighten fork stem bolt and triple clamp screws. Check bearing adjustment. See 1.19 STEERING HEAD BEARINGS.

**⚠ WARNING**

**Do not operate vehicle with steering head locked. This will restrict the vehicle's turning ability which could result in death or serious injury.**

4. Install set screw in lock. Test lock.
  - a. Turn handlebars all the way to the left.
  - b. Insert ignition key in lock.
  - c. Turn key clockwise while pushing in.
  - d. Remove key and verify that steering head is locked.
  - e. Unlock steering head by inserting key and turning key counterclockwise.



**Figure 2-110. Steering Head Lock**

## REMOVAL

### NOTE

Mark all hardware as it is removed so that it may be returned to its original location.

1. Compress suspension to access rear fender fasteners. Remove rear fender and lower belt guard. See 2.40 REAR FENDER.
2. Place vehicle on a lift and anchor front wheel in place.

### WARNING

To avoid accidental start-up of vehicle and possible personal injury, disconnect the battery cables before proceeding. Always disconnect the negative cable first. If the positive cable should contact ground with the negative cable installed, the resulting sparks may cause a battery explosion which could result in death or serious injury.

3. Disconnect **both** battery cables, negative cable first.
4. Remove seat and attach lifting straps to motorcycle. Insert lifting straps through opening on tail section near tail section mounting bolts.
5. Attach lifting straps to a floor hoist placed behind the lift. Raise motorcycle off lift until rear suspension is unloaded.
6. Remove mounting bolt attaching swingarm to rear shock.
7. Remove rear wheel.
8. Remove cap from oil tank and drain oil.
9. Detach feed line from bottom of oil tank.
10. Detach rear brake pedal from master cylinder pushrod.
11. Remove left side rider footrest and shifter lever.
12. See Figure 2-111. Place a jack under the crankcase.
13. Detach rear tie bar from swingarm.
14. See Figure 2-112. Remove left and right isolator bolts and washers (7).

### CAUTION

Remove oil filter before raising frame. Without removal, oil filter will be damaged during procedure.

15. Place a drip pan under the oil filter. Remove oil filter.
16. Using floor hoist, raise frame enough to remove both rubber isolators (6) from frame mounted pins.
17. Loosen swingarm pinch screw (4) on right side.
18. Remove threaded rod (1) from between bearing adjusting bolts (2, 3).

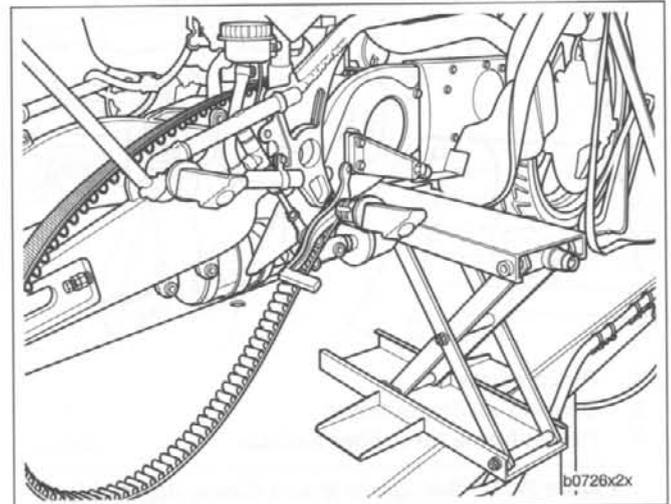


Figure 2-111. Scissors Jack (Typical)

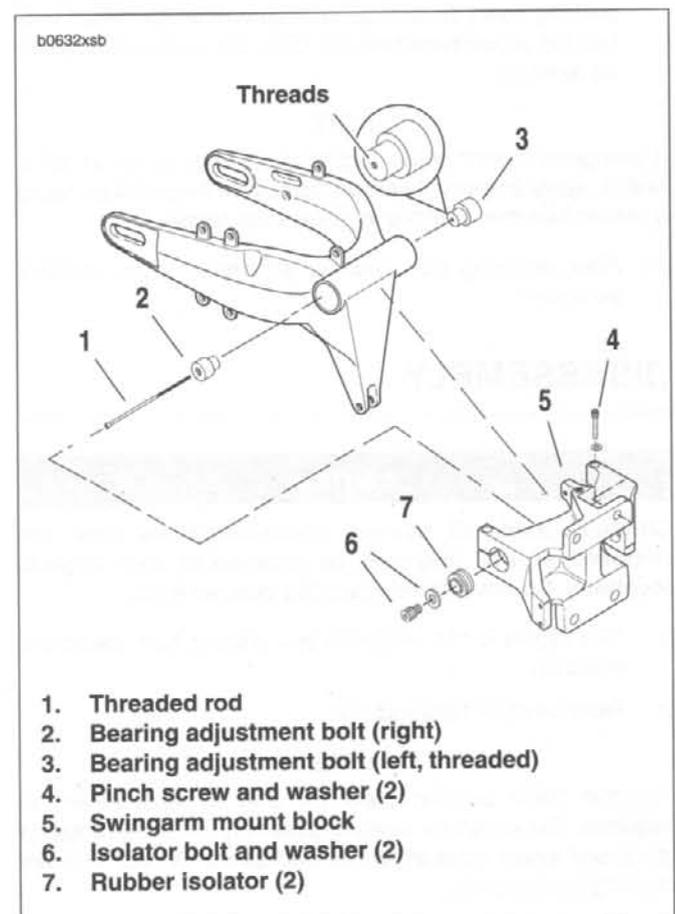


Figure 2-112. Swingarm Assembly

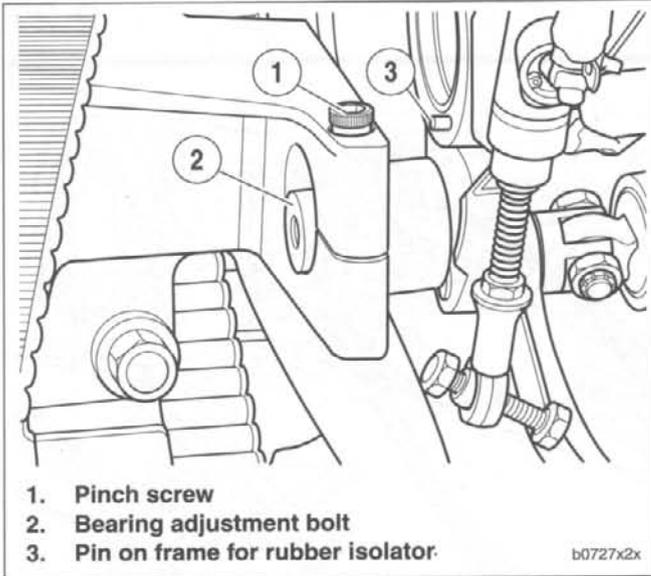


Figure 2-113. Swingarm Mount Block, Right Side

19. Loosen remaining swingarm pinch screw.
20. See Figure 2-113. Using floor hoist, raise frame while pushing down on swingarm. Frame must be raised until bearing adjustment bolts (2) clear pin on frame and can be removed.

**NOTE**

If swingarm mount block doesn't drop from frame as lift is raised, apply leverage between frame and mount block using a plastic hammer wrapped in clean shop towels.

21. After removing both bearing adjustment bolts, remove swingarm.

**DISASSEMBLY**

**CAUTION**

Carefully mark all bearing components as they are removed, so that they may be returned to their original locations. Do not intermix bearing components.

1. See Figure 2-114. Remove and discard both swingarm seals (3).
2. Remove roller bearings (4).

**NOTE**

Remove roller bearing cups (5) only if replacement is required. The complete bearing assembly must be replaced as a unit when replacement is necessary. Do not intermix bearing components.

3. See Figure 2-115. Carefully press roller bearing cups from swingarm using STEERING HEAD BEARING RACE REMOVER (Part No. HD-39301A) and UNIVERSAL DRIVER HANDLE (Part No. HD-33416).

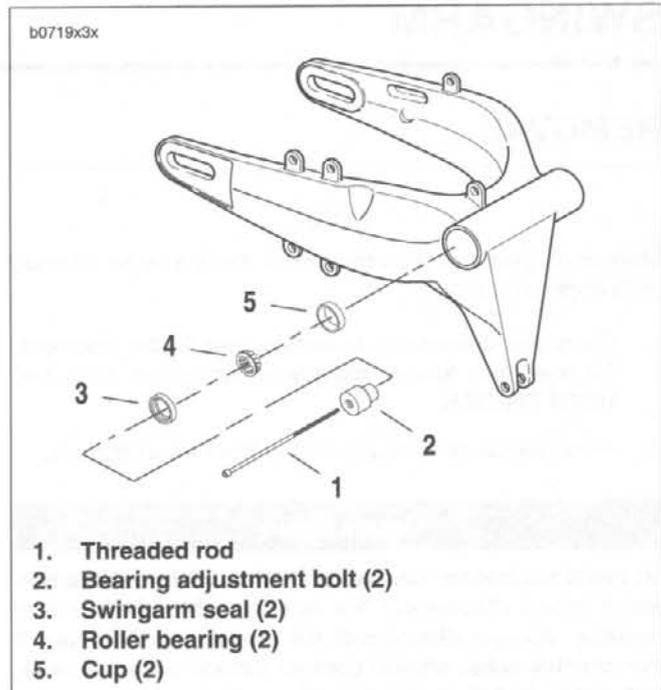


Figure 2-114. Swingarm Bearings

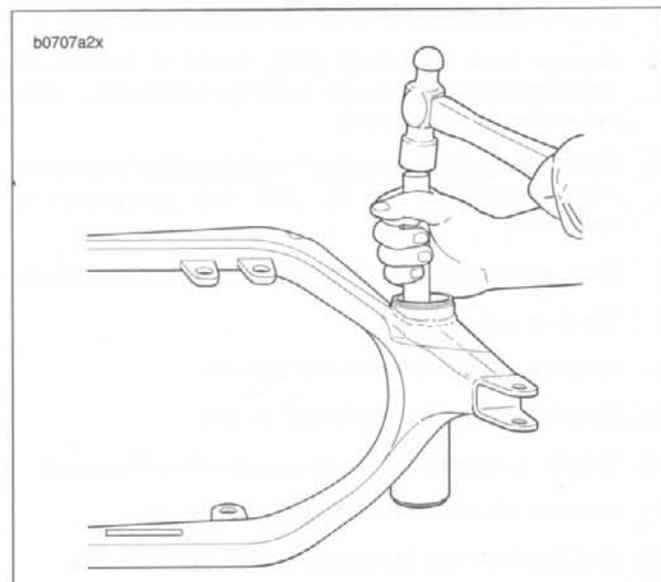


Figure 2-115. Removing Roller Bearing Cups

**CLEANING/INSPECTION**

1. Thoroughly clean all components in solvent. Blow dry with compressed air.
2. Carefully inspect all bearing components for wear and/or corrosion. Replace complete bearing assembly if any component is damaged.
3. Check that swingarm is not bent or twisted. Replace if damaged.

## ASSEMBLY

1. See Figure 2-116. If necessary, draw **new** roller bearing cups into swingarm using BEARING INSTALLATION BOLT (Part No. B-35316-5) and STEERING HEAD BEARING RACE INSTALLER (Part No. HD-39302).

### NOTE

Roller bearing assemblies should be replaced as a unit. Do not intermix components. Mark all components so they may be correctly installed.

2. Coat bearing components with WHEEL BEARING GREASE (Part No. HD-99855-89) and assemble.
3. See Figure 2-114. Install **new** swingarm seals (3) flush to the swingarm.
4. Slide swingarm assembly into position.

### NOTE

See Figure 2-112. The left side bearing adjustment bolt (3) has additional internal threads.

5. Install bearing adjustment bolts (2, 3).
  - a. Apply LOCTITE THREADLOCKER 222 (purple) to the threaded rod (1).
  - b. Insert the rod through the right side bearing adjusting bolt (2).
  - c. Install and tighten left bearing adjustment bolt (3) (with internal threads) on left side of swingarm.
  - d. Tighten the left pinch screw (4) on the swingarm mount block (5). Do not tighten the right side pinch screw at this time.
  - e. Insert rod through swingarm into left side bearing adjustment bolt. Tighten to an initial torque of 11-12 ft-lbs (14.9-16.3 Nm).

## INSTALLATION

1. See Figure 2-112. Align **new** swingarm between posts on swingarm mount block (5).
2. Insert left (threaded) and right bearing adjustment bolts (2, 3) into swingarm until flush with mount block surface.
3. Tighten left side swingarm pinch screw (4) to 18-20 ft-lbs (24.4-27.1 Nm).
4. Install threaded rod (1).
  - a. Apply LOCTITE THREADLOCKER 222 (purple) to threaded rod.
  - b. Insert threaded rod through right side bearing adjustment bolt (2) into threads on left side bolt (3).
  - c. Tighten rod to an initial torque of 10-13 ft-lbs (13.6-17.6 Nm).
5. Check swingarm preload using a scale as shown in Figure 2-117. Preload should be 3.0-3.75 lbs (1.36-1.70 kg). If preload does not meet specifications, tighten or loosen threaded rod and recheck.

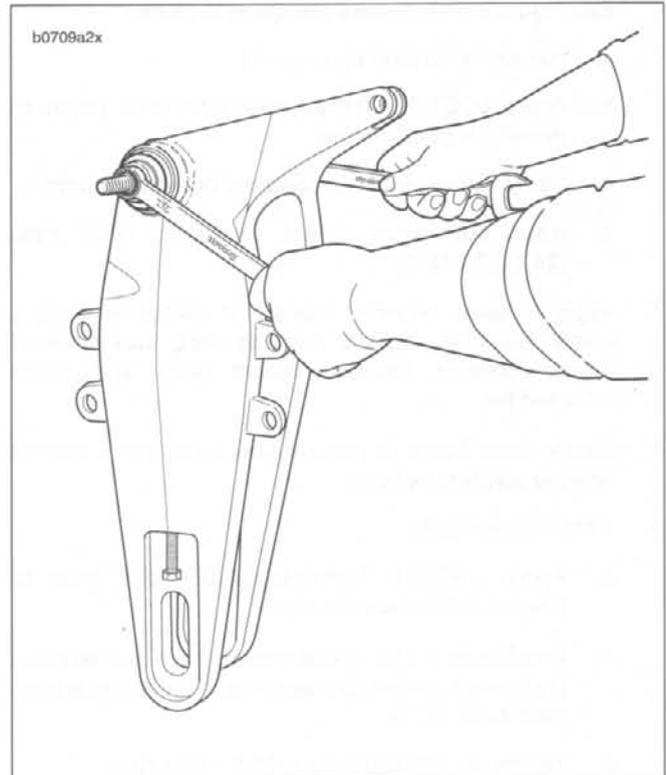


Figure 2-116. Installing Bearings into Swingarm

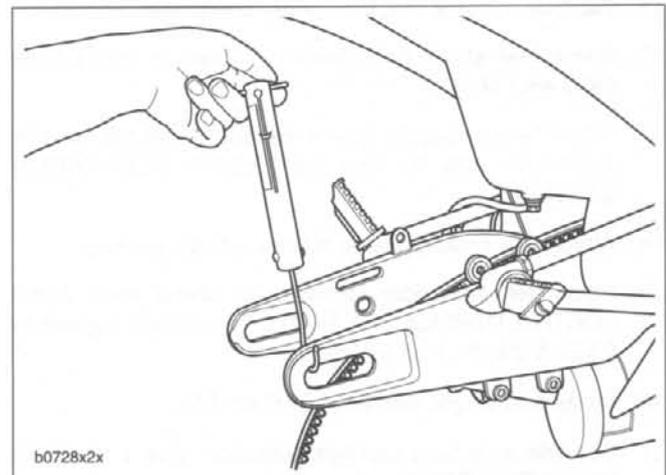


Figure 2-117. Checking Preload

6. See Figure 2-113. Secure swingarm in place.
  - a. Remove both pinch screws (1).
  - b. Apply LOCTITE THREADLOCKER 243 (blue) to threads of pinch screws.
  - c. Verify that swingarm is centered between mounts.
  - d. Install both pinch screws. Tighten to 18-20 ft-lbs (24.4-27.1 Nm).
7. Apply pressure between frame and swingarm using a plastic hammer wrapped in clean shop towels. Insert rubber isolators between mount block and frame mounted pin.
8. Slowly lower frame to place rubber isolators in front of bearing adjustment bolts.
9. Install isolator bolts.
  - a. Apply LOCTITE THREADLOCKER 272 (red) to threads of both isolator bolts.
  - b. See Figure 2-112. Install isolator bolts and washers (7) through rubber isolators and into bearing adjustment bolts (2, 3).
  - c. Tighten to 100-110 ft-lbs (135.6-149.1 Nm).
10. Attach rear tie bar to swingarm mount block. Tighten to 30-33 ft-lbs (40.7-44.7 Nm).
11. Remove scissors jack from under crankcase.
12. Install rear shock bolt (metric). Tighten to 30-33 ft-lbs (40.7-44.7 Nm).
13. Attach feed and drain lines to oil tank. Install filter and fill motorcycle with oil. See 1.6 ENGINE LUBRICATION SYSTEM.
14. Attach rear brake pedal to master cylinder pushrod.
15. Attach left side rider footrest and shifter lever. Apply LOCTITE THREADLOCKER 272 (red) to bolt. Tighten to 23-25 ft-lbs (31.2-33.9 Nm).
16. Install rear wheel. See 2.7 REAR WHEEL.
17. Set axle alignment and belt deflection. See 1.13 REAR BELT DEFLECTION.
  - a. See Figure 2-118. Check rear axle alignment.
  - b. See Figure 2-119. Check belt deflection.
  - c. Proceed to the next step when both axle alignment and belt deflection are correct.
18. See Figure 2-120. Tighten locknut (2) flush against nut (3). Tighten axle nut (metric) to 66-73 ft-lbs (89.5-98.9 Nm). Verify that belt deflection is correct. Lower motorcycle onto lift.

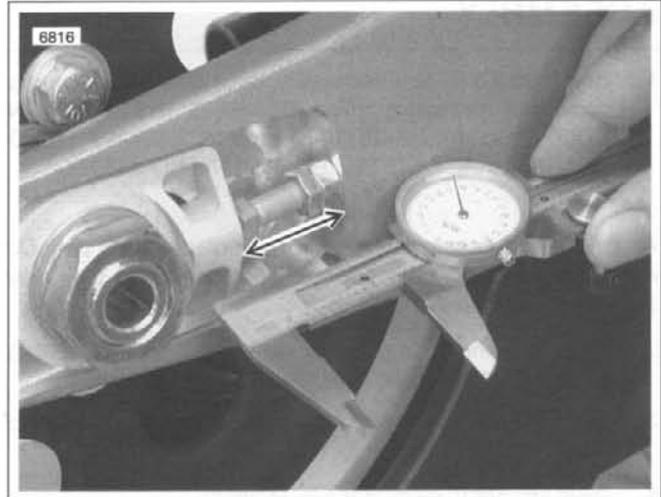


Figure 2-118. Checking Rear Wheel Alignment, Right Side Shown

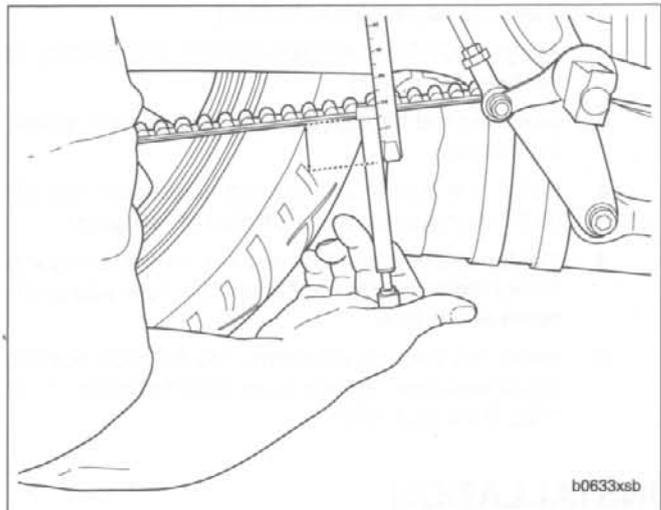
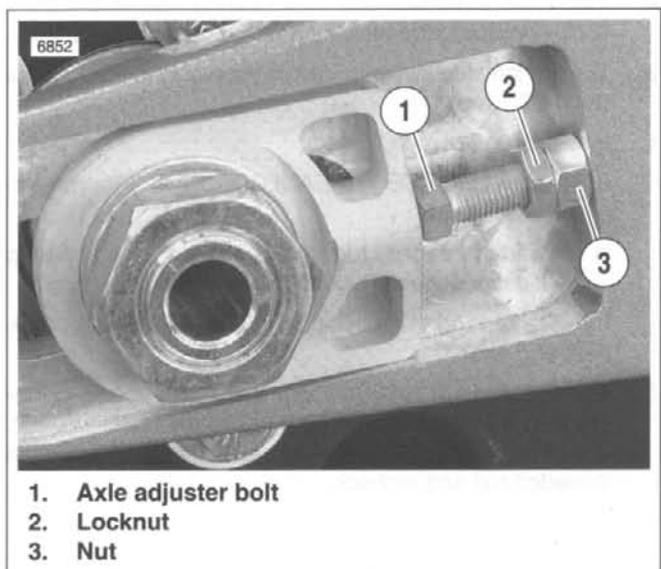


Figure 2-119. Belt Deflection



1. Axle adjuster bolt
2. Locknut
3. Nut

Figure 2-120. Axle Adjuster Bolt, Right Side Shown

**⚠ WARNING**

After installing seat, pull upward on front of seat to be sure it is locked in position. If seat is loose, it could shift during vehicle operation and startle the rider, causing loss of control which could result in death or serious injury.

19. Remove lifting straps and install seat.

**⚠ WARNING**

Always connect positive battery cable first. If the positive cable should contact ground with the negative cable installed, the resulting sparks may cause a battery explosion which could result in death or serious injury.

20. Attach both battery cables.

21. Remove motorcycle from lift.
22. Compress suspension to install rear fender and lower belt guard. See 2.40 REAR FENDER.
23. Check oil level after starting motorcycle and allowing it to reach operating temperature.

**⚠ WARNING**

After completing repairs or bleeding the system, always test motorcycle brakes at low speed. If brakes are not operating properly or braking efficiency is poor, testing at high speeds could result in death or serious injury.

24. Check rear brake operation.

## REMOVAL

**NOTE**

Rear shock absorber contains no user serviceable parts.

1. Lift rear wheel off ground using REAR WHEEL SUPPORT STAND (Part No. B-41174).
2. Remove chin fairing. See 2.42 CHIN FAIRING.
3. Remove seat and attach lifting straps to motorcycle. Insert lifting straps through opening on tail section near tail section mounting bolts.
4. Attach lifting straps to a floor hoist placed behind the motorcycle. Raise motorcycle off lift until rear suspension is unloaded.
5. See Figure 2-121. Remove reservoir.
  - a. Remove locknut and washer on the front reservoir clamp (3).
  - b. Loosen rear reservoir clamp (1). Slide reservoir (2) and mount block (4) out of clamps.
6. See Figure 2-122. Remove allen bolt (metric) and locknut on front mount (3).
7. While supporting the shock absorber, remove the allen bolt (metric) and locknut from the rear mount (1).
8. Remove shock absorber assembly.

## INSTALLATION

1. See Figure 2-123. Place **new** bushings (2, 8) into mounting holes of shock absorber
2. See Figure 2-122. Loosely install rear allen bolt (1) (metric) and locknut.
3. Loosely install front allen bolt (3) (metric) and locknut.
4. See Figure 2-121. Loosely install rear clamp (1) and front clamp (3) around reservoir (2) and mounting block (4).

**NOTE**

Torque front allen bolt and nut from the bolt side only.

5. Tighten front bolt to 49-53 ft-lbs (66.4-71.9 Nm).
6. Tighten nut on rear bolt to 30-33 ft-lbs (40.7-47.4 Nm).
7. Tighten clamps around reservoir.

**WARNING**

After installing seat, pull upward on front of seat to be sure it is locked in position. If seat is loose, it could shift during vehicle operation and startle the rider, causing loss of control which could result in death or serious injury.

8. Remove lifting straps and install seat.
9. Install chin fairing. See 2.42 CHIN FAIRING.
10. Check rear shock preload. See 1.16 PRELOAD ADJUSTMENT.

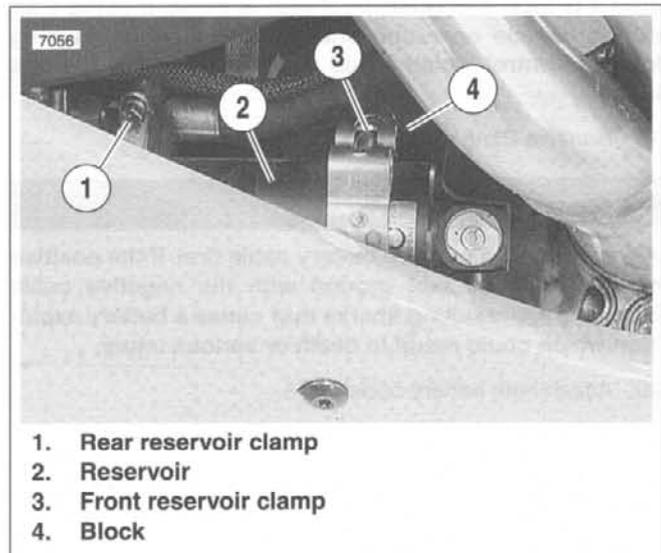
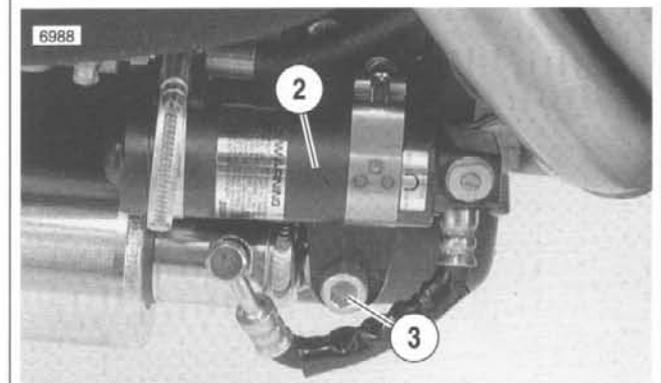
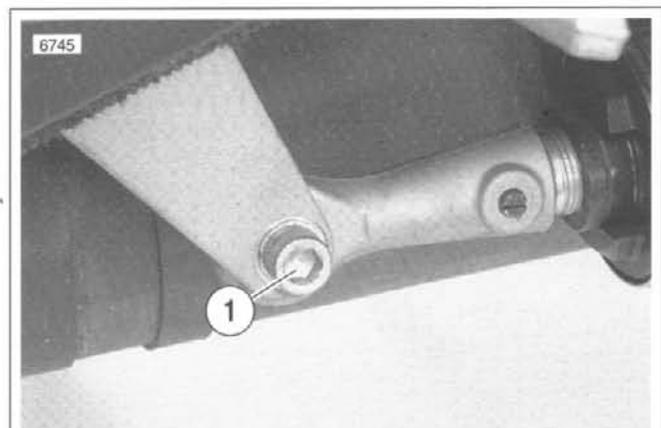
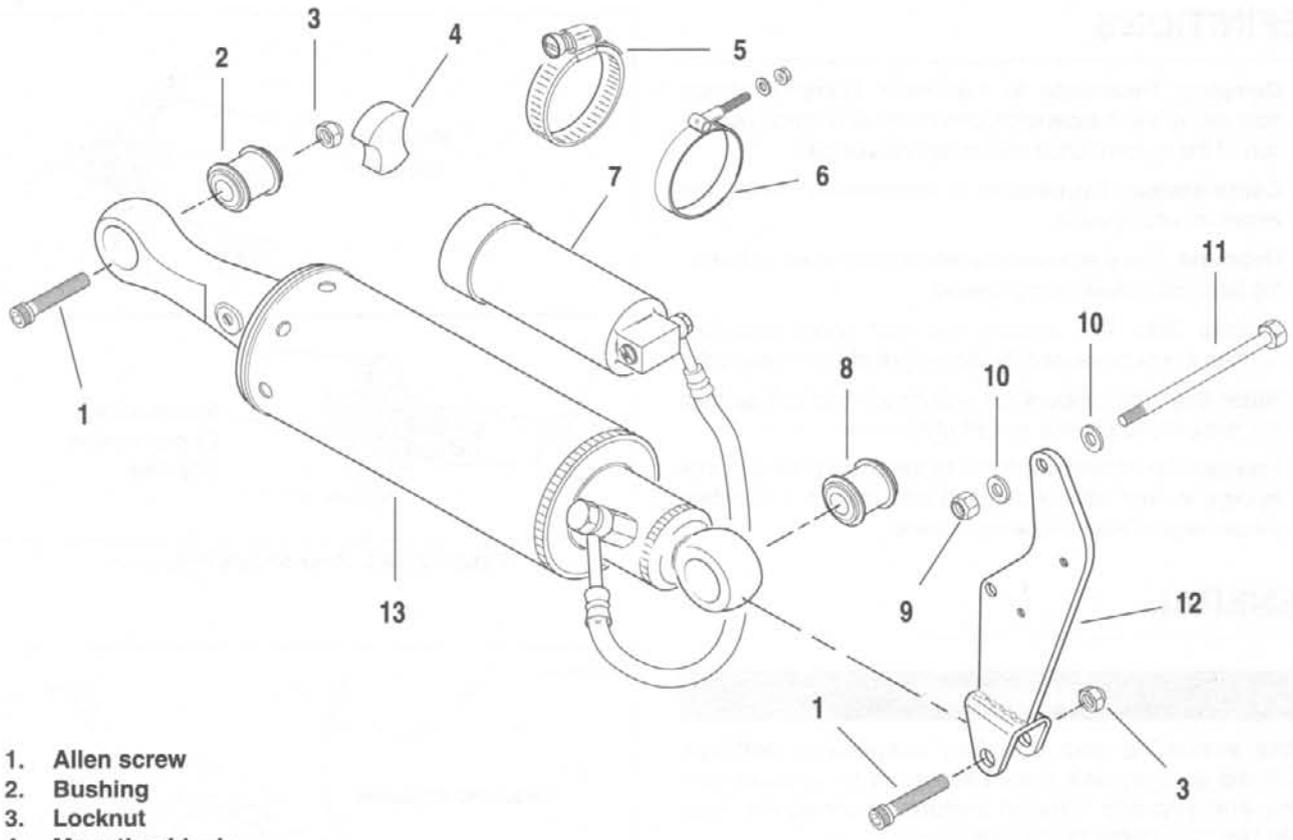


Figure 2-121. Reservoir Clamps



1. Rear mount
2. Reservoir
3. Front mount

Figure 2-122. Shock Mounting Hardware



- 1. Allen screw
- 2. Bushing
- 3. Locknut
- 4. Mounting block
- 5. Clamp
- 6. Clamp
- 7. Reservoir
- 8. Bushing
- 9. Locknut
- 10. Washer
- 11. Bolt
- 12. Mounting bracket
- 13. Shock absorber assembly

Figure 2-123. Rear Shock Absorber

## DEFINITIONS

- **Damping:** Resistance to movement. Damping affects how easily the suspension can move and limits oscillation of the system once movement has begun.
- **Compression:** Suspension is compressed when the wheel moves upward.
- **Rebound:** The suspension is rebounding when it is moving back from being compressed.
- **Vehicle Sag:** The amount the rear shock and fork springs are compressed by the weight of the motorcycle.
- **Rider Sag:** The amount the rear shock and fork springs are compressed by the weight of the rider.
- **Preload:** An adjustment made to the rear shock and fork springs to limit vehicle sag and rider sag to a standard percentage of total suspension travel.

## GENERAL

**⚠ WARNING**

Before evaluating and adjusting suspension settings, check the motorcycle's tires. Tires must be in good condition and properly inflated. Failure to check the tires could result in death or serious injury.

See Figure 2-124. The rear suspension adjusts for compression and rebound damping and spring preload.

See Figure 2-125. The front suspension adjusts for compression and rebound damping.

If the rear preload adjustment is correct, and you have the rebound and compression damping set at the factory recommended points, the motorcycle should handle and ride properly. If you are unhappy with these settings they can be changed according to the following procedures.

**NOTE**

Evaluating and changing the rebound and compression damping is a very subjective process. Many variables affect motorcycle handling under different circumstances. Approach all changes carefully and consult Table 2-4.

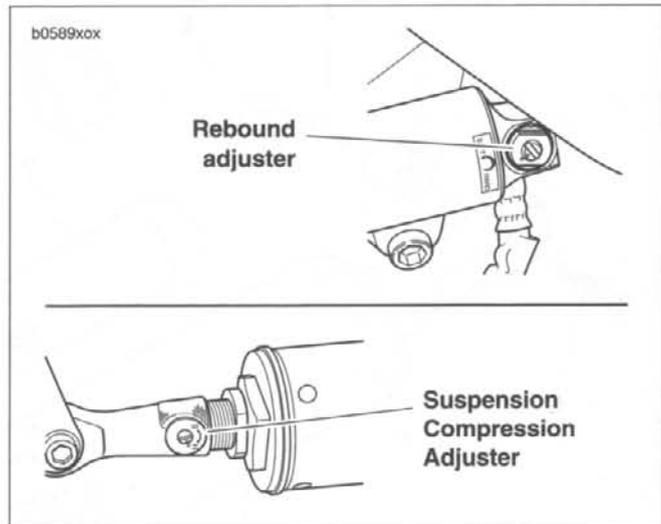


Figure 2-124. Rear Shock Adjusters

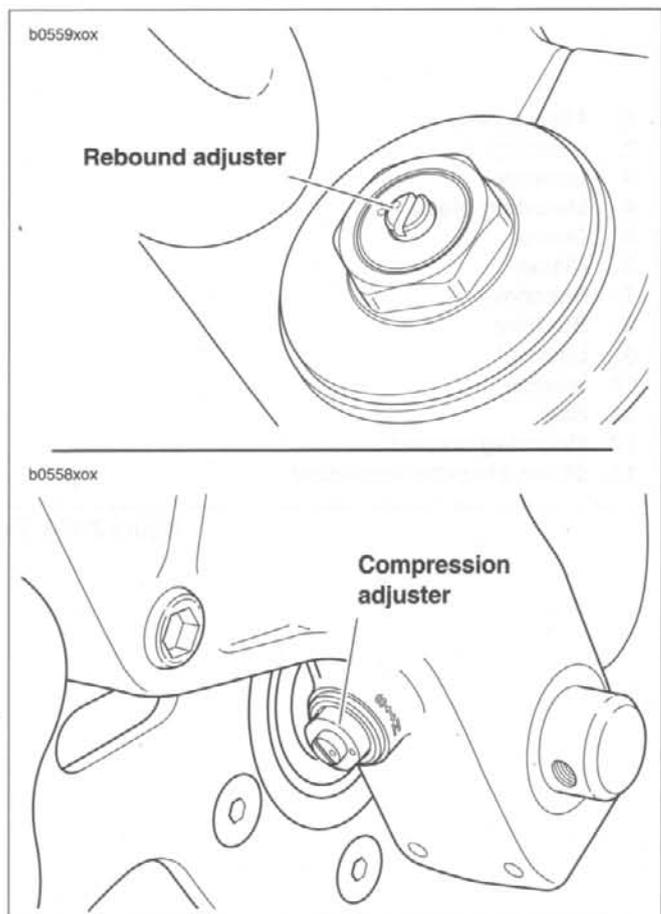


Figure 2-125. Fork Adjustments

## SPRING PRELOAD

Adjust rear spring preload before attempting any other adjustments. See 1.16 PRELOAD ADJUSTMENT. This setting assures that the rear suspension has the proper amount of travel for the rider's weight and the motorcycle's cargo load.

Make this adjustment before the motorcycle is ridden any distance. Your Buell dealer can assist you if necessary.

## ADJUSTMENTS

Evaluating and changing the rebound and compression damping is a very subjective process. A good performing suspension finds a proper balance between spring, spring preload, damping, track conditions and riding speed. However, all settings are at best a compromise. If a rider fails to find a good set-up, go back to the factory recommended settings and start over again.

Make all suspension adjustments in one or two click increments. Adjusting more than one or two clicks at a time may cause you to skip the best adjustment. Test ride after each adjustment. When an adjustment makes no difference, return to the previous adjustment and try a different approach.

To find the optimum settings you will need the preload properly adjusted, the tires properly inflated and a familiar bumpy road. It is useful if the road contains a variety of different bumps from small sharp bumps such as potholes or frost

heaves to large undulations. Begin the process by putting all the damping adjustments at the factory recommended settings. See Table 2-4. Ride the bike over a variety of different surfaces and bumps at different speeds. When the suspension is set properly the motorcycle will be stable and comfortable.

## TROUBLESHOOTING

### WARNING

**This section is intended solely as a guide to diagnosing problems. Carefully read the appropriate sections of this manual before performing any work. Improper suspension adjustments could cause loss of control and result in death or serious injury.**

The following tables list possible suspension and operating troubles and their probable causes. Use the tables to keep your motorcycle in good operating condition.

When making adjustments, remember there are two mediums in setting up a bike, geometry and suspension. Both components work together because suspension is a part of geometry. In order to solve handling problems, it is important to diagnose the problem's true nature. Chattering, sliding or an uncomfortable feeling are suspension problems. Handling and a swinging fork are geometry problems, but often these problems can be solved by suspension adjustments.

**Table 2-1. General Suspension Problems**

TROUBLESHOOTING CONDITION	ADJUSTMENT SOLUTION
Bike wallows through turns. Feels loose or vague after bumps. Wheel tends to "pogo" after passing over a bump. This is noticeable by watching the bike continue to bounce as it travels over multiple bumps.	Increase rebound damping.
Wheel responds to bump, but doesn't return to ground quickly after bumps. This is more pronounced over a series of bumps and is often referred to as "packing down."	Reduce rebound damping.
The bike bottoms out or dips while cornering. Bike has excessive brake dive.	Increase compression damping.
Harsh ride particularly over washboard surfaces. Bumps kick through handlebars or seat. Suspension seems not to respond to bumps. This is evidenced by tire chattering (a movement with short stroke and high frequency) through corners or by jolting the rider over rough roads.	Reduce compression damping.

**Table 2-2. Rear Suspension Problems**

<b>TROUBLESHOOTING CONDITION</b>	<b>ADJUSTMENT SOLUTION</b>
"Pumping on the Rear" occurs when you are accelerating out of a corner. This problems occurs in two varieties. 1. The first type has a movement with a long stroke and a high frequency. 2. The second version has a movement with a short stroke and high frequency.	1. The shock is too soft. Increase compression damping. If the adjuster is already set to the maximum, add more preload to the spring (one turn maximum). 2. In this case the shock is too hard. Decrease compression damping.
Chattering during braking.	Decrease the compression damping. If the problem persists, decrease rebound damping for a faster rebound rate. Less spring preload may also help.
Lack of tire feedback.	The suspension is too soft. Increase compression damping.
Sliding during cornering. Sliding may occur going into the corner or accelerating out of the corner.	The suspension is too hard. Decrease compression damping.

**Table 2-3. Front Suspension Problems**

<b>TROUBLESHOOTING CONDITION</b>	<b>ADJUSTMENT SOLUTION</b>
Not absorbing bumps.	A good suspension is a balance between damping and track condition. Finding this balance requires exploring all possible compression settings.
Lack of tire feedback.	Increase compression damping.
Tire slides.	Decrease compression damping.



## MODEL YEAR CHANGE

All 2000 model Buell motorcycles have throttle cable clamps located by the ferrules on the throttle body.

## REMOVAL/DISASSEMBLY

1. See Figure 2-126. Slide rubber boot (5) off the cable adjusters (4). Loosen cable adjuster lock (3) on each adjuster.
2. See Figure 2-127. Remove two screws (1, 6) on front housing. Separate housings from handlebar.
3. Unhook ferrules (7) from cable wheel (8).
4. Remove cables from notches in housings (5, 9).
5. Remove air cleaner cover and backplate. See 4.39 AIR CLEANER.
6. **2000 Models Only:** Remove screw and throttle cable clamps from cables by throttle body.
7. Disconnect cables from throttle body manifold to remove.

## CLEANING, INSPECTION AND REPAIR

Clean all parts in a non-flammable cleaning solvent. Blow dry with compressed air. Replace cables if frayed, kinked or bent.

## ASSEMBLY/INSTALLATION

1. See Figure 2-127. Place cable assemblies (3, 4) into housings (5, 9). Throttle control cable (4) has a molded fitting end and is positioned inside the front housing (5). Idle control cable (3) has a smaller fitting end and is positioned inside the rear housing (9).
2. Run cables inside grooves of each housing (5, 9).
3. Attach ferrules (7) to cable wheel (8). When properly assembled, notches for ferrules will be at 12 o'clock.
4. Position housings on right handlebar by engaging locating pin (10) on front housing with hole in handlebar. Attach housings with two screws (1, 6), installing longer screw on bottom. Tighten to 12-17 **in-lbs** (1.4-1.9 Nm).

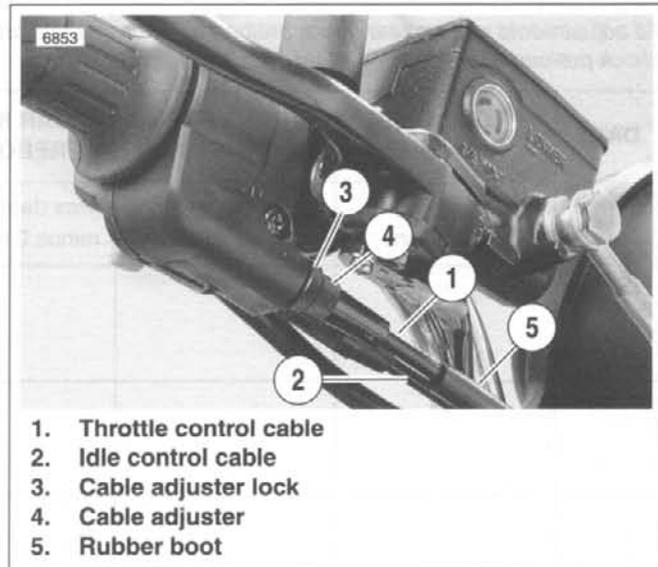


Figure 2-126. Throttle Control Cables

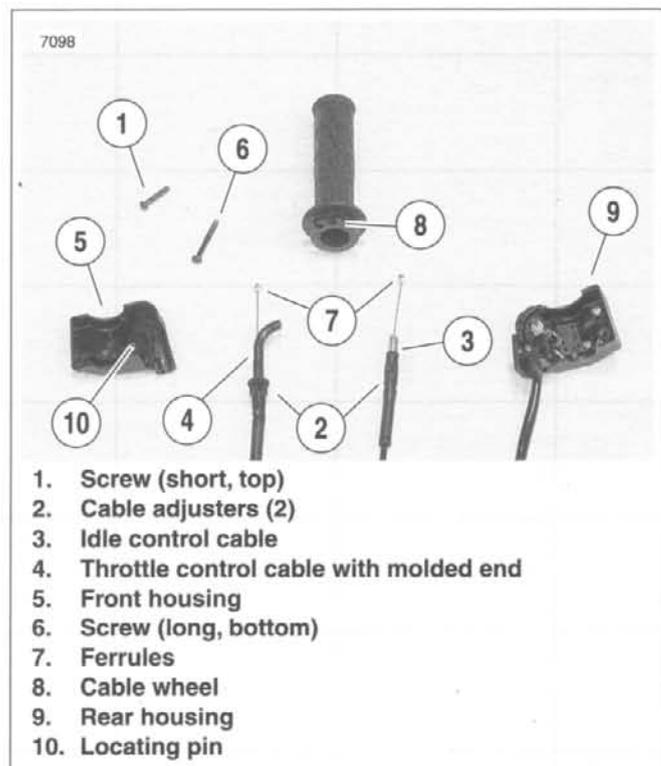


Figure 2-127. Cable Connections

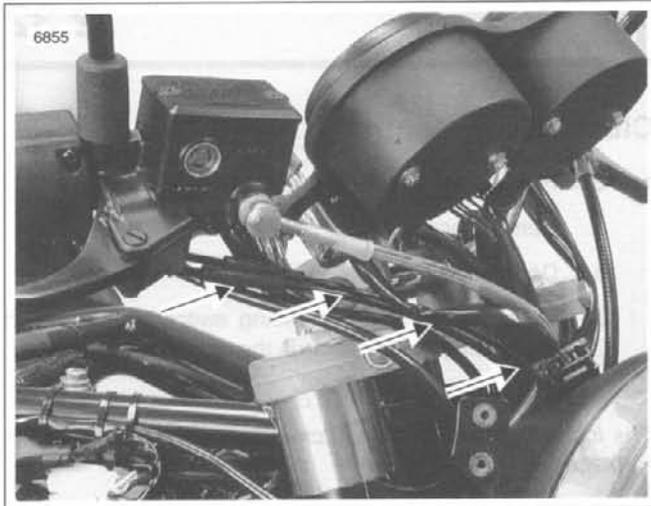


Figure 2-128. Handlebar Routing

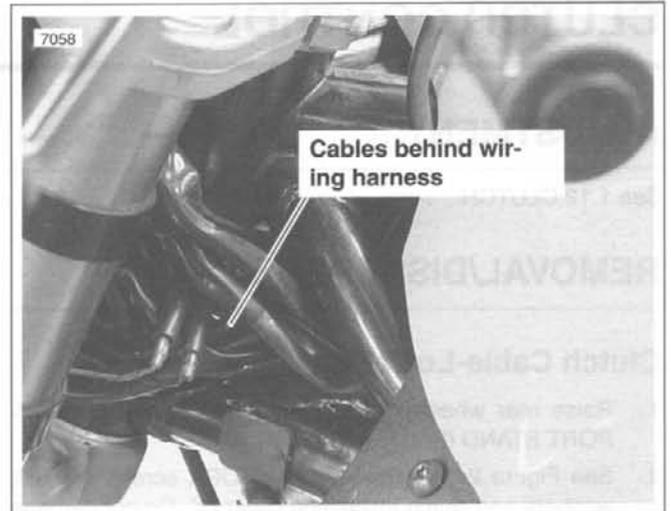


Figure 2-129. Steering Neck Routing

5. Route idle and throttle control cables.
  - a. See Figure 2-128. Cables must be routed forward from throttle control grip, forward of upper triple clamp and to the left.
  - b. See Figure 2-129. Continue between the left side of frame steering head and left frame tube. Cables should be above and to the left of the D-shaped washer behind the steering head.
  - c. See Figure 2-130. Route cables below the fuel tank and continue downward.
6. Attach throttle cables to throttle body manifold and adjust. See 1.22 THROTTLE CABLES.
  - **2000 Models only:** See Figure 2-131. Attach throttle cable clamp to ferrules with screw (arrow on clamp points up).
7. Install air cleaner assembly. See 4.39 AIR CLEANER.



Figure 2-130. TBM Routing

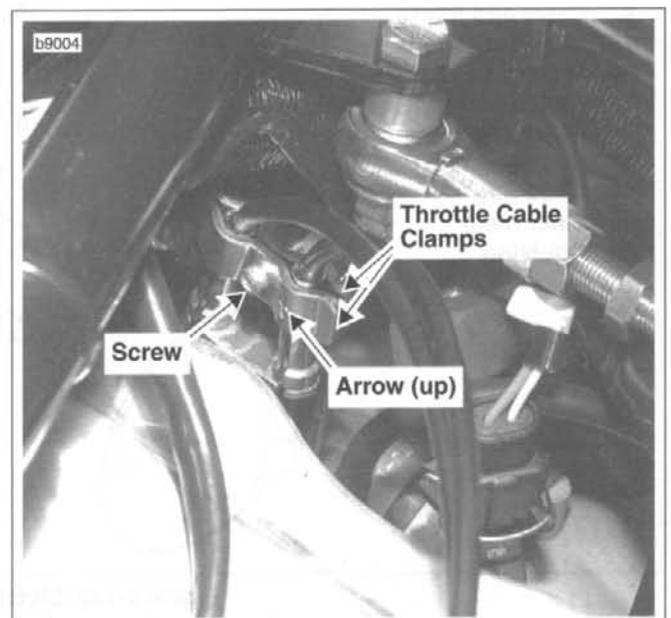


Figure 2-131. Throttle Cable Clamps (2000 Models)

## ADJUSTMENT

See 1.12 CLUTCH.

## REMOVAL/DISASSEMBLY

### Clutch Cable-Lower

1. Raise rear wheel off floor using REAR WHEEL SUPPORT STAND (Part No. B-41174).
2. See Figure 2-132. Remove four TORX screws (1) with washers and clutch inspection cover (2). Do not damage or dislodge quad ring (14) in primary cover (11).
3. Slide spring (3) with attached hex lockplate (4) from flats of adjusting screw (12).
4. Turn adjusting screw clockwise to release ramp and coupling mechanism. As the adjusting screw is turned, ramp assembly moves forward. Unscrew nut (5) from end of adjusting screw.
5. Remove hook of ramp (6) from button at the rear of cable end coupling (16). Remove cable end (10) from slot in coupling.
6. Turn cable end fitting (9) counterclockwise to remove clutch cable lower section from primary cover (11). Remove O-ring (8) from cable end fitting.

### Clutch Hand Control

1. See Figure 2-133. Detach clutch switch (7).
  - a. Remove screw (8).
  - b. Depress clutch lever and hold.
  - c. Detach switch by depressing switch trigger button and pulling switch towards the end of the handlebar.

#### NOTE

*The individual parts of the clutch switch are not serviceable. Replace switch upon failure.*

2. Remove bolt (2) (metric) and nut (6) (metric).
3. Remove handlebar from clutch clamp (5). Detach clutch cable from handlebar.
4. Remove clutch cable clamp (10) from frame.
5. Remove clutch clamp.
  - a. Cut off left handgrip.
  - b. Remove left handlebar switch housing. See 7.16 HANDLEBAR SWITCHES.
  - c. Remove clamp screw (4) (metric). Slide clamp off the end of the handlebar.

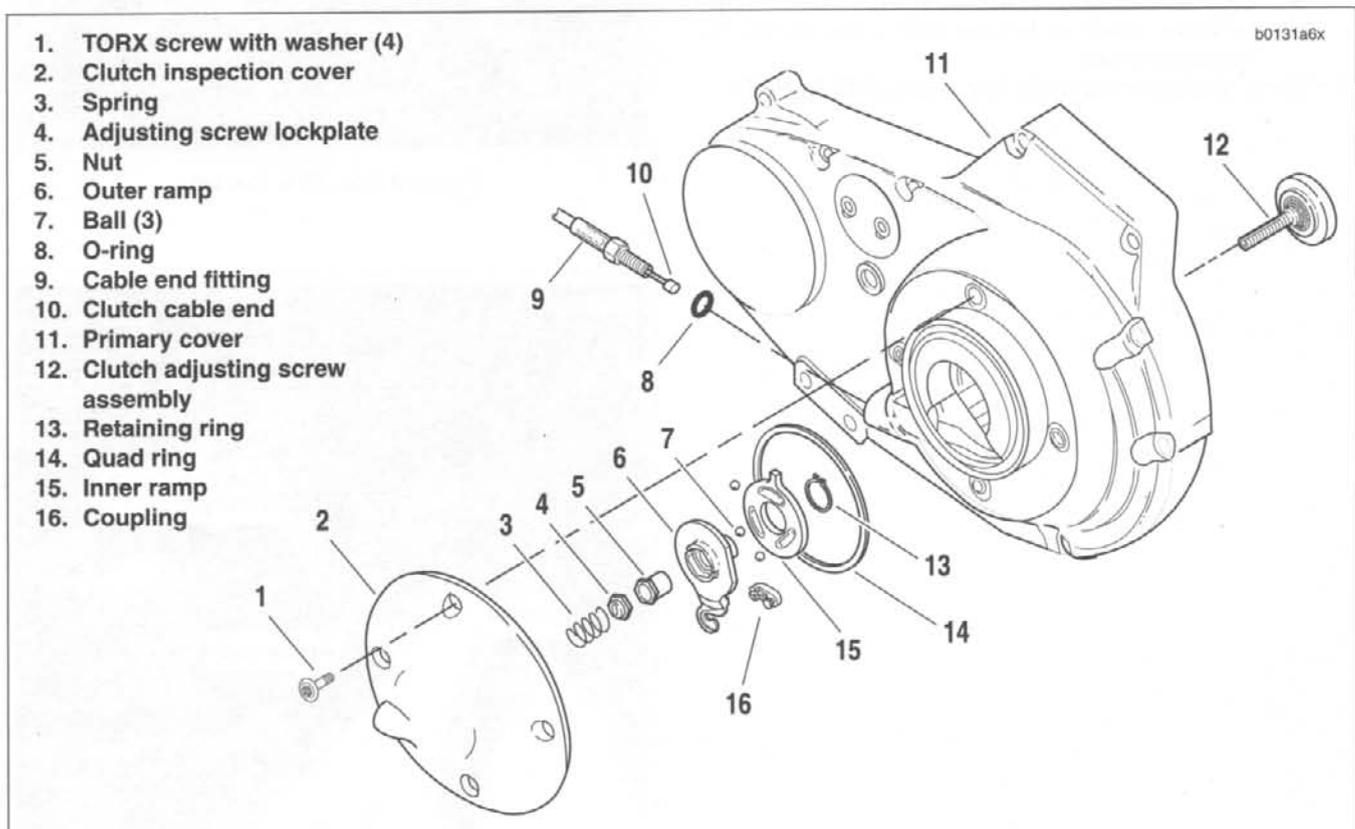


Figure 2-132. Clutch Release Mechanism

## ASSEMBLY/INSTALLATION

### Clutch Cable-Lower

- See Figure 2-132. Install O-ring (8) over cable end fitting (9) of clutch cable lower section. Turn fitting clockwise to install into primary cover (11). Tighten to 3-5 ft-lbs (4.0-6.8 Nm).
- Fit coupling (16) over cable end. Place hook of ramp around coupling button and rotate assembly counter-clockwise until tang on inner ramp (15) fits in slot of primary cover (11).
- Thread nut (5) on adjusting screw (12) until slot of screw is accessible with a screwdriver. Fit nut hex into recess of outer ramp (6) and turn adjusting screw counter-clockwise.
- If not yet performed, route clutch cable to hand control.
  - See Figure 2-134. Route cable along left side of primary chaincase and up to clamp on front isolator tie bar. Cable must not touch chin fairing.
  - Clamp should be on bottom left of bolt. Brass fitting on cable should be approximately 3.0 in. (76 mm) above clamp.
  - Continue above and behind lower triple clamp, between right side of the steering head and left of front brake line.
  - Route cable across front of upper triple clamp to hand grip.
- With clutch cable upper section connected to clutch lever, check primary chain tension. Adjust if necessary. See 1.15 PRIMARY CHAIN.
- Adjust clutch. See 1.12 CLUTCH.

### Clutch Hand Control

- See Figure 2-133. Attach clutch clamp (5) as follows.
  - Slide clamp over handlebar.
  - Install left switchgear housing. See 7.16 HANDLEBAR SWITCHES.
  - Place clamp next to switchgear housing. Fasten to handlebar with screw (4) (metric). Tighten to 30-35 **in-lbs** (3.4-4.0 Nm).
  - Install a **new** left handgrip. See 2.34 HANDLEBARS.
- Connect end of clutch cable upper section to clutch handlebar. Position lever within clutch clamp.
- Apply small amount of LOCTITE ANTI-SEIZE LUBRICANT to bolt (2). Attach handlebar with bolt (2) (metric) and nut (6) (metric).
- Attach clutch switch (7) with screw (8).
- If not yet performed, route clutch cable to primary cover.
  - Route cable from hand grip across front of upper triple clamp.
  - Continue to right side, down between right fork leg and steering neck. Route cable between right side of the steering head and left of front brake line.

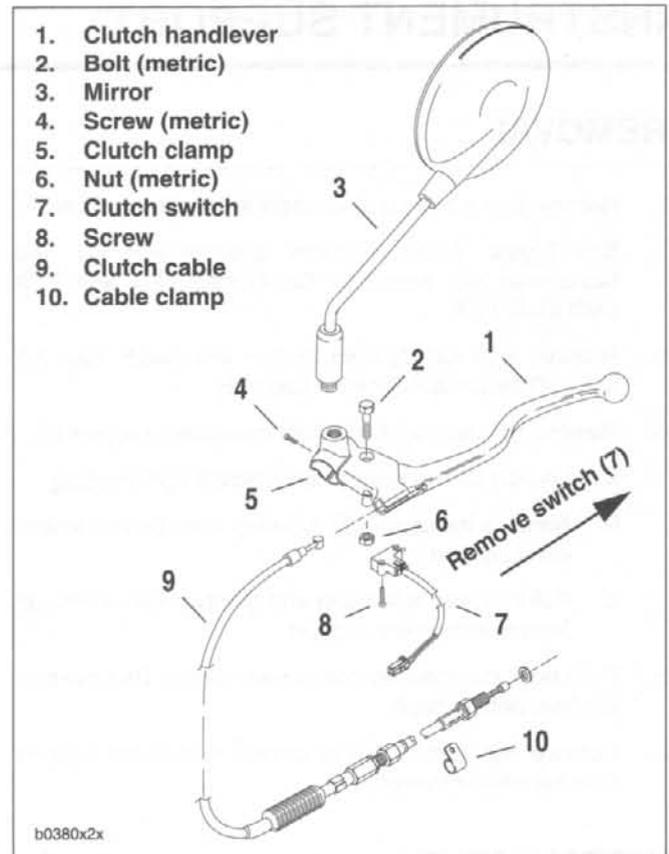


Figure 2-133. Clutch Hand Control

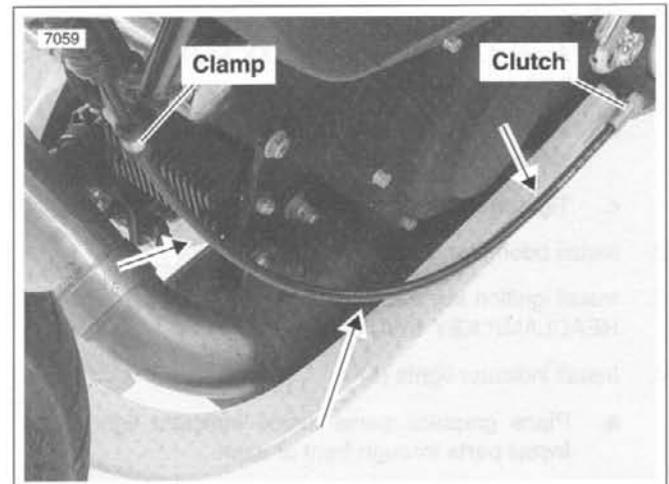


Figure 2-134. Clutch Cable Routing, Lower

- Continue through clamp on front isolator. Clamp should be on bottom left of bolt. Brass fitting on cable should be approximately 3.0 in. (76 mm) above clamp.
  - See Figure 2-134. Route cable down left side of bike, through clamp, along primary chaincase to clutch. Cable must not touch chin fairing.
- With clutch cable lower section connected to primary cover, adjust clutch. See 1.12 CLUTCH.

## REMOVAL

1. Remove four screws and washers to detach windscreen.
2. See Figure 2-135. Remove speedometer (1) and tachometer (4). See 7.18 SPEEDOMETER and 7.19 TACHOMETER.
3. Remove face nut (3) from ignition key switch. See 7.3 IGNITION/HEADLAMP KEY SWITCH.
4. Remove indicator lights (5) from instrument support (2).
  - a. Loosen all four catches on indicator light housing.
  - b. Remove indicator light housing from behind instrument support.
  - c. Pull indicator light bezel and graphics panel through front of instrument support.
5. Pull plastic cap from odometer reset button. Remove button from behind dash.
6. Remove two screws (6) to detach instrument support from handlebar clamp.



Figure 2-135. Instrument Support

## INSTALLATION

1. See Figure 2-135. Attach instrument support to handlebar clamp.
  - a. Apply LOCTITE THREADLOCKER 243 (blue) to both screws (6).
  - b. Align instrument support on handlebar clamp. Install two screws.
  - c. Tighten to 4-5 ft-lbs (5.4-6.8 Nm).
2. Install odometer reset button.
3. Install ignition key switch face nut (3). See 7.3 IGNITION/HEADLAMP KEY SWITCH.
4. Install indicator lights (5).
  - a. Place graphics panel inside indicator light bezel. Install parts through front of dash.
  - b. See Figure 2-136. Align wire colors on indicator light housing with correct symbols on graphics panel.
  - c. Insert indicator light housing into bezel. Secure with four catches.
5. See Figure 2-135. Install both instruments. See 7.18 SPEEDOMETER and 7.19 TACHOMETER.
6. Attach windscreen using four screws and washers.

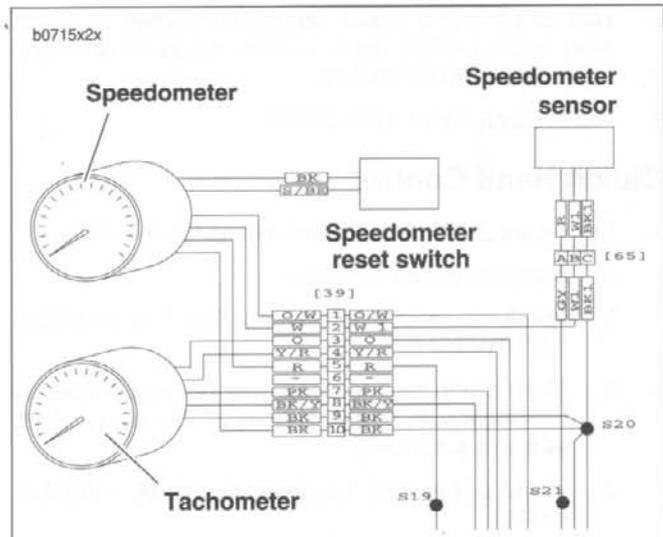


Figure 2-136. Instrument Support Wiring

## REMOVAL

1. Remove left handlebar switch housing. See 7.16 HANDLEBAR SWITCHES. Cut left handlebar grip and remove.
2. Detach clutch hand control from handlebars. See 2.32 CLUTCH CONTROL.
3. Remove front brake master cylinder. See 2.11 FRONT BRAKE MASTER CYLINDER (1999 Models) or 2.18 FRONT BRAKE MASTER CYLINDER (2000 Models).
4. Loosen screws on right handlebar switch housing, but do not detach throttle grip assembly from handlebar. See 2.31 THROTTLE CONTROL.
5. Remove four screws and washers to detach windscreen.
6. See Figure 2-137. Remove four screws (1, 2) from instrument support (3).
7. Lift instruments and remove handlebars without stretching throttle cables.
8. Remove throttle grip assembly.

## INSTALLATION

1. Slide handlebars into throttle grip assembly. Fasten right handlebar switch housing to handlebar. See 2.31 THROTTLE CONTROL.
2. Attach handlebars.
  - a. See Figure 2-137. Lift instruments and place handlebars under instrument support. Loosely install four screws (1, 2).
  - b. Tighten both front screws (1) to 10-12 ft-lbs (13.6-16.2 Nm).
  - c. Then tighten both rear screws (2) 10-12 ft-lbs (13.6-16.2 Nm).
3. Install clutch hand control. See 2.32 CLUTCH CONTROL.
4. Install left switch housing. See 7.16 HANDLEBAR SWITCHES.
5. Check control wire routings.
  - a. See Figure 2-138. Route right hand control wires (1) in front of handlebar and triple clamp (4).
  - b. Route left hand control wires (2) in front of handlebar and triple clamp (4).
6. Install a **new** left handgrip.
  - a. Clean end of handlebar with M600.
  - b. Place LOCTITE 411 ADHESIVE around inside of grip.
  - c. Push grip onto handlebar end. Twist grip on bar until end touches left switchgear housing.
  - d. Wipe off excess adhesive with a rag.
7. Install front brake master cylinder. See 2.11 FRONT BRAKE MASTER CYLINDER (1999 Models) or 2.18 FRONT BRAKE MASTER CYLINDER (2000 Models).
8. Attach windscreen using four screws and washers.

9. Check steering motion range to both fork stops. See 1.24 HANDLEBARS.

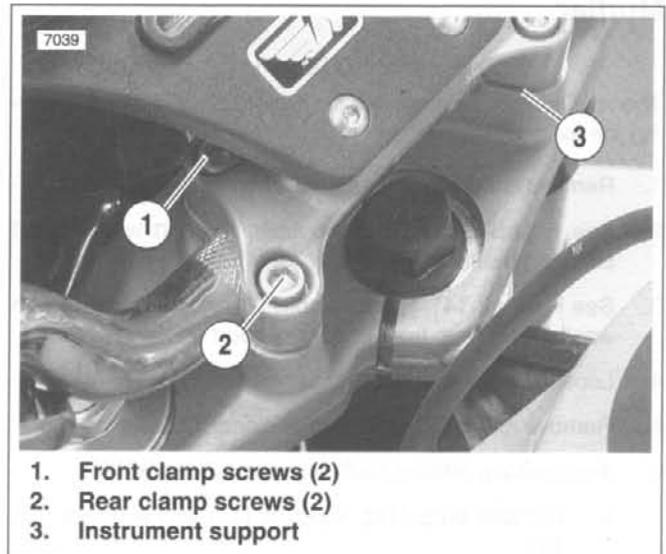


Figure 2-137. Instrument Support Screws

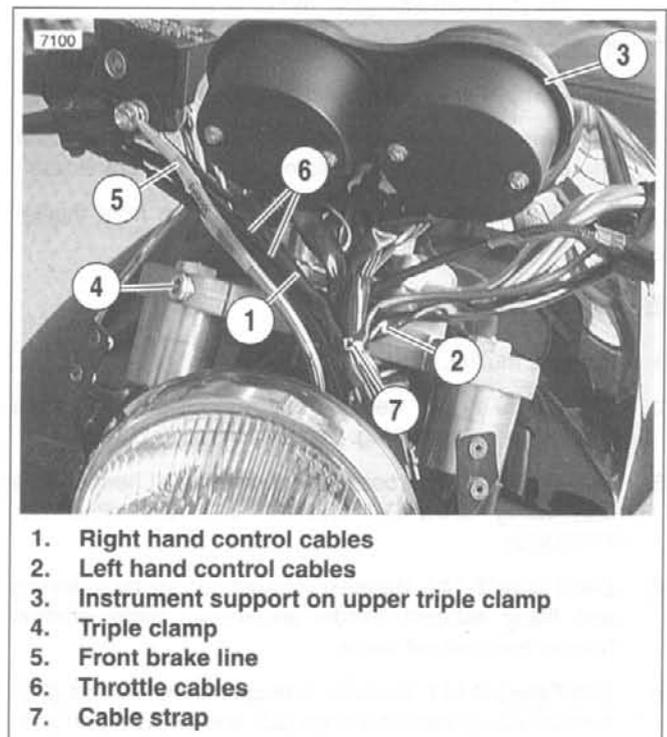


Figure 2-138. Routing Hand Control Wires

## REMOVAL/DISASSEMBLY

### Muffler

**NOTE**

The muffler may be removed for replacement without removing the exhaust header.

1. Remove chin fairing. See 2.42 CHIN FAIRING.
2. See Figure 2-139. Remove bolts (1) and washers (2) securing muffler (3) to Z-bracket (4).
3. See Figure 2-141. Remove bolts (5) and locknuts (6) with washers (7) from front muffler support (8).
4. Loosen screw securing muffler clamp (9).
5. Remove muffler (3) and muffler clamp. Discard clamp.
6. If necessary, remove muffler support Z-bracket (4).
  - a. Remove bolts (10), locknuts (11) and washers (12, 13).
  - b. Remove muffler support Z-bracket (4).
  - c. Remove rear muffler mounts (14) and mount spacers (15) from swingarm mount block.
7. If necessary, remove front muffler support (8).
  - a. Remove bolts (16), locknuts (17) and washers (18).
  - b. Remove nuts and washers securing front muffler support to voltage regulator bracket and crankcase.
  - c. Remove muffler support (8). Remove front muffler mounts (19) and mount spacer (15).

### Exhaust Header

1. Remove muffler.
2. See Figure 2-140. Remove any restrictive cable straps on oxygen sensor wiring. Detach connector [137].
3. See Figure 2-141. Loosen the four exhaust header nuts (20) using SNAP-ON SWIVEL SOCKET (Part No. PFSX916).
4. See Figure 2-142. Remove exhaust header by swiveling and lifting exhaust header as shown. Slide exhaust header from behind frame.
5. See Figure 2-141. Remove exhaust header clamps (22), exhaust clamp retaining rings (23) and exhaust port gaskets (24) from exhaust header.

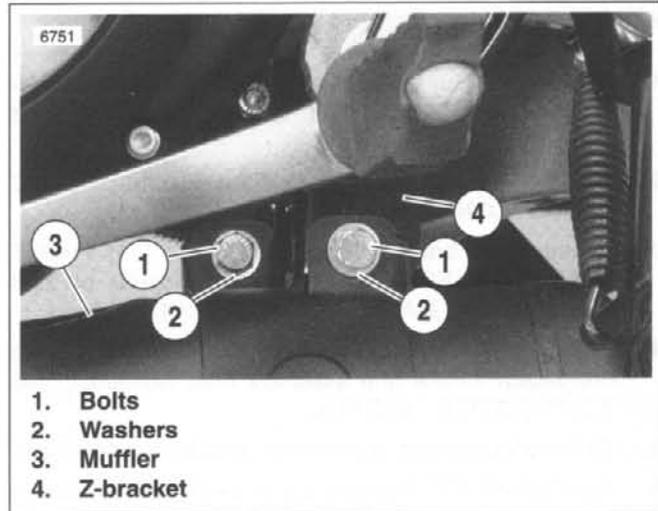


Figure 2-139. Rear Muffler Mounts

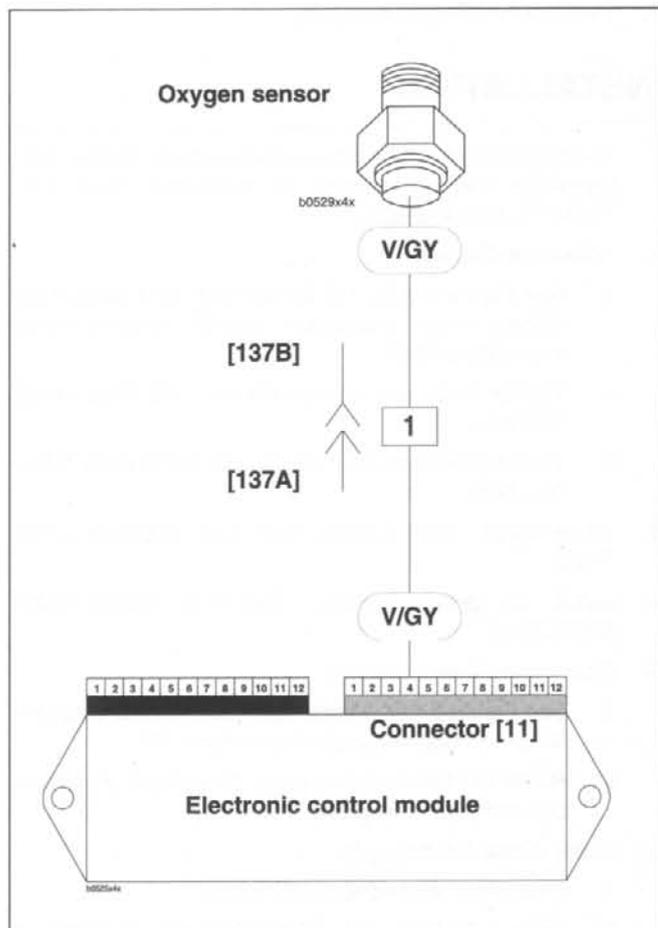
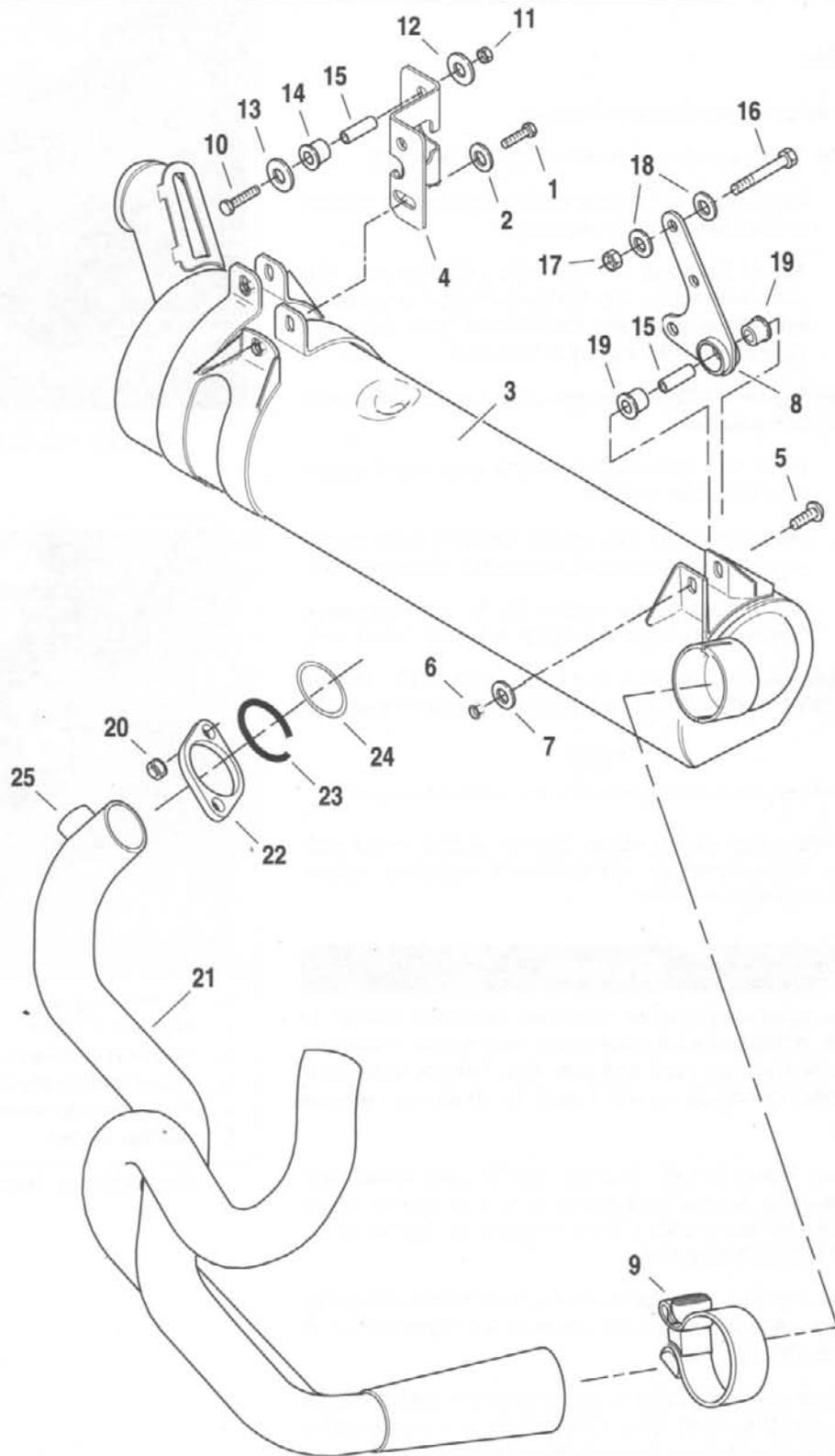


Figure 2-140. Oxygen Sensor Wiring

b0605x2x



1. Bolt (2)
2. Washer (2)
3. Muffler
4. Z-bracket
5. Bolt
6. Locknut
7. Washer
8. Muffler support
9. Muffler clamp
10. Bolt (2)
11. Locknut (2)
12. Washer (2)
13. Washer (2)
14. Rear muffler mount (2)
15. Mount spacer (3)
16. Bolt (2)
17. Locknut (2)
18. Washer (4)
19. Front muffler mount (2)
20. Exhaust header nut (4)
21. Exhaust header
22. Exhaust header clamp (2)
23. Exhaust clamp retaining ring (2)
24. Exhaust port gasket (2)
25. Oxygen sensor mount

Figure 2-141. Exhaust System

## ASSEMBLY/INSTALLATION

### Muffler

1. If removed, install exhaust header.
2. See Figure 2-141. If removed, install Z-bracket (4).
  - a. Install rear muffler mounts (14) and mount spacers (15) on swingarm mount block.
  - b. Attach Z-bracket (4) with bolts (10), locknuts (11) and washers (12, 13). Bolt heads install on opposite side of the swingarm mount block from Z-bracket. Tighten to 8-10 ft-lbs (10.8-13.6 Nm).
3. See Figure 2-143. If removed, attach front muffler support to crankcase.
  - a. Insert two front muffler mounts and mount spacer (5) into muffler support.
  - b. Install nuts and washers (2) securing front muffler support to voltage regulator bracket and crankcase.
  - c. Attach front muffler support (1) to crankcase using fasteners (3). Tighten to 30-33 ft-lbs (40.7-44.7 Nm).
4. Coat inside of muffler inlet with PERMATEX ULTRA-COPPER HIGH TEMP RTV SILICON GASKET material.

#### NOTE

If necessary, use a fiber hammer to fit muffler on header.

5. Place a **new** muffler clamp (6) over slotted end of muffler. Place muffler and clamp on end of exhaust header. Loosely tighten clamp.

#### WARNING

Before tightening muffler hardware, position muffler to provide adequate clearance from rear shock absorber, side stand spring post and rear tire. Failure to provide adequate clearance could result in death or serious injury.

6. See Figure 2-139. Position muffler and install rear mounting support and weldnuts in rear muffler straps with two sets of bolts (1) and washers (2). Tighten to 17-19 ft-lbs (23-25.8 Nm).
7. See Figure 2-143. Secure muffler to front mounting support with bolt, locknut and washers (4). Tighten to 17-19 ft-lbs (23-25.8 Nm).
8. When only the muffler is being replaced, tighten muffler clamp (6) to 40-45 ft-lbs (54.2-61.0 Nm). If also installing the exhaust header, leave muffler clamp loose.

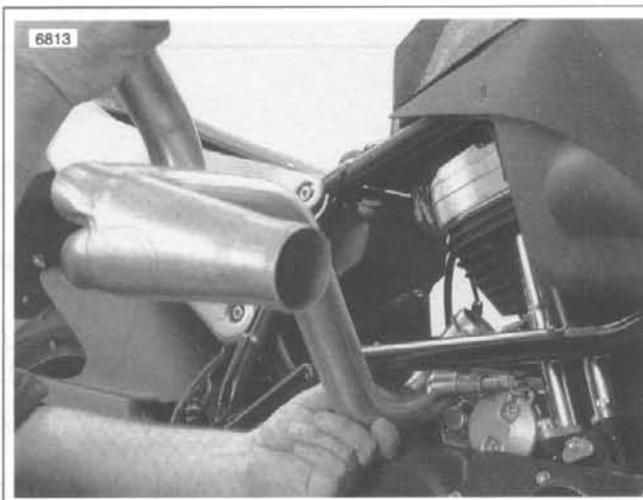


Figure 2-142. Exhaust Header Positioning

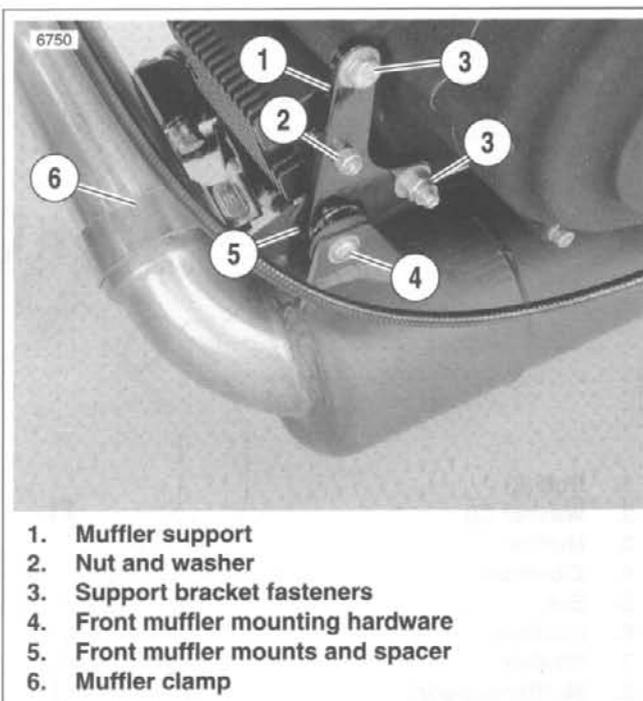


Figure 2-143. Front Muffler Support Installed

## Exhaust Header

### NOTE

Muffler hardware must be tightened before tightening exhaust header hardware.

1. See Figure 2-144. Install **new** exhaust port gaskets (5) and exhaust clamp retaining rings (4).
2. Slide exhaust header clamps (3) over ends of exhaust header (1).
3. See Figure 2-142. Slide exhaust header under frame by positioning as shown, threading oxygen sensor wire under frame.
4. See Figure 2-145. Position rear end of exhaust header in port as shown. Do not install exhaust header clamp over port.
5. Rotate exhaust header so that front end of exhaust header is in position at front port to cylinder head.
6. See Figure 2-144. Fasten exhaust header to cylinder heads with exhaust header clamps (3) and nuts (2). Tighten nuts to 6-8 ft-lbs (8.1-10.8 Nm) using SNAP-ON SWIVEL SOCKET (Part No. PFSX916).
7. Install oxygen sensor to header if removed. Apply LOC-TITE ANTI-SEIZE LUBRICANT to threads of sensor and install to exhaust header. Tighten sensor to 42-45 ft-lbs (56.9-61 Nm). Attach oxygen sensor connector [137]. Secure wiring and sensor with **new** cable ties.
8. Tighten muffler clamp to 40-45 ft-lbs (54.2-61.0 Nm).
9. Install chin fairing. See 2.42 CHIN FAIRING.

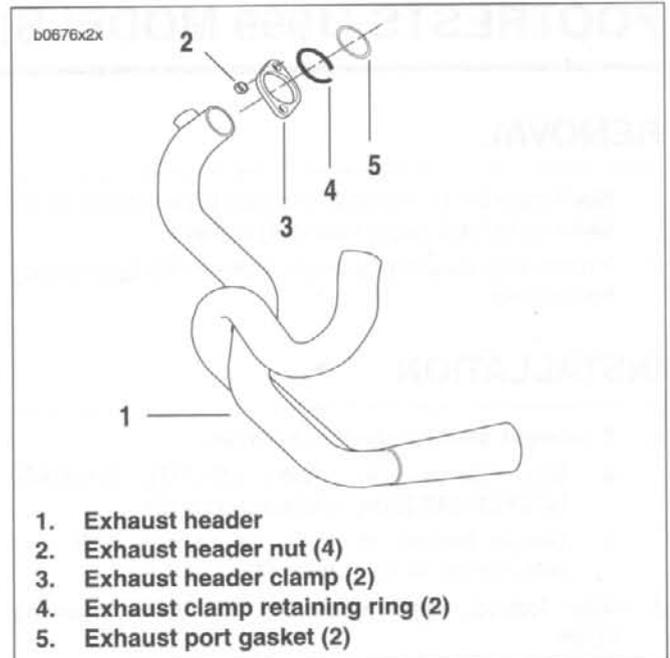


Figure 2-144. Exhaust Header



Figure 2-145. Exhaust Header Alignment

## REMOVAL

1. See Figure 2-147. Remove two bolts (1) and locknuts (3) securing footrest frame mount (4) to frame.
2. If necessary, detach passenger footrests (2) by removing bolt and nut.

## INSTALLATION

1. If removed, install passenger footrests.
  - a. See Figure 2-147. Apply LOCTITE THREADLOCKER 243 (blue) to footrest bolts (2).
  - b. Secure footrest to frame mount with bolts and nuts. Tighten to 10-15 ft-lbs (13.6-20.3 Nm).
2. Align footrest frame mount (4) with frame mounting holes.
  - a. Apply LOCTITE THREADLOCKER 272 (red) to mounting bolts (1).
  - b. Secure mounts with bolts (1) and locknuts (3). Tighten to 13-16 ft-lbs (17.6 -21.7 Nm).

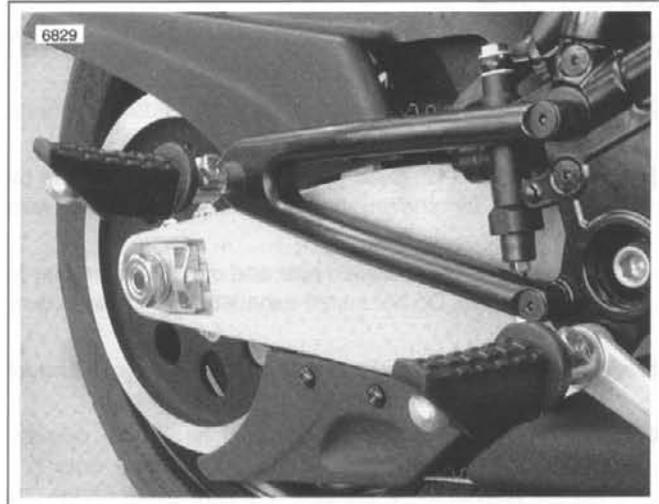


Figure 2-146. Footrest Frame Mount

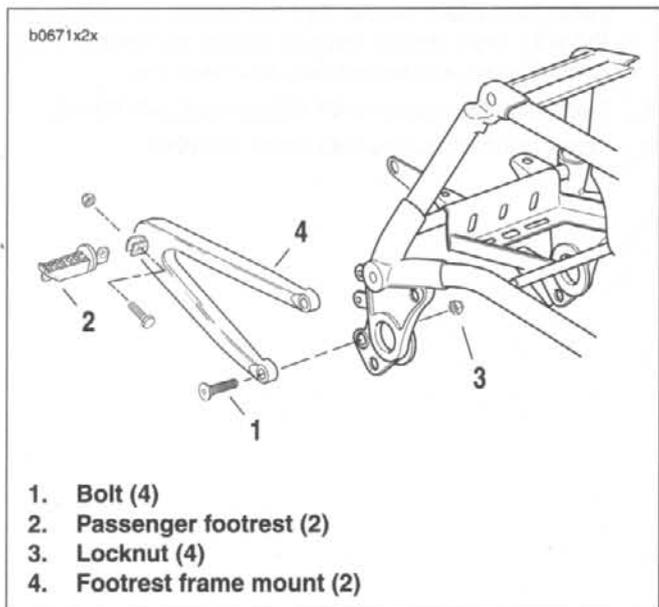


Figure 2-147. Footrest Frame Mount—Exploded View

## MODEL YEAR CHANGE

All 2000 Model Year Buell Motorcycles are equipped with spring-loaded rider footrests.

## REMOVAL

1. See Figure 2-148. To remove rider footrest.
  - a. Remove retaining ring (1) and washer (2) from pin (3).
  - b. Hold hand over spring (4) and remove pin, spring and footpeg (5) from mount (6).
2. If necessary, detach passenger footrest (7) by removing bolt (8) and nut (9) from frame mount.

## INSTALLATION

1. If removed, install passenger footrest.
  - a. See Figure 2-148. Apply LOCTITE THREAD-LOCKER 243 (blue) to footrest bolts (8).
  - b. Secure footrest to frame mount with bolt (8) and nut (9). Tighten to 10-15 ft-lbs (13.6-20.3 Nm).
2. To install rider footrest.
  - a. Position spring (4) on mount (6) with thick side of spring inboard.
  - b. Install pin (3) through spring (4), mount (6) and footrest (5).
  - c. Install washer (2) and retaining ring (1) to pin (3). Make sure retaining ring engages groove in pin.

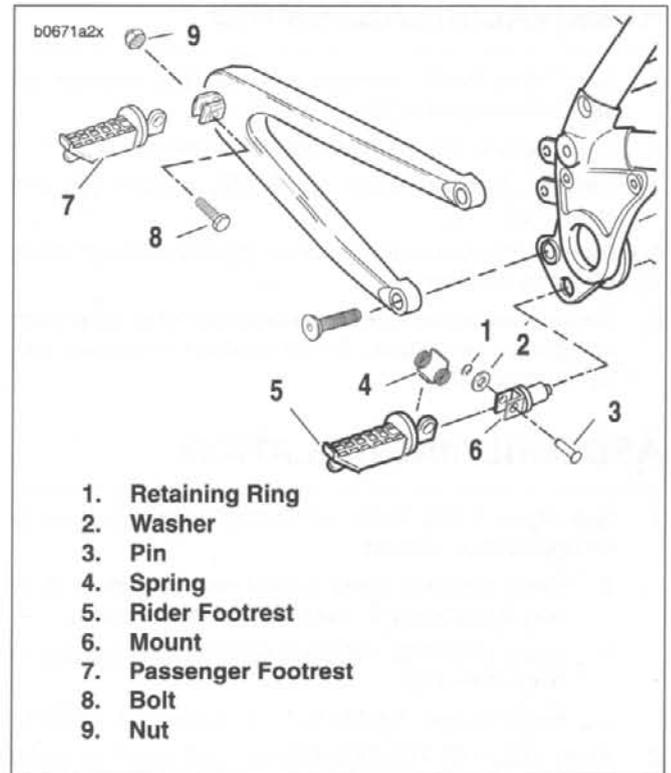


Figure 2-148. Footrests (2000 Models)

## REMOVAL/DISASSEMBLY

1. See Figure 2-149. Remove two bolts (1), washers (2) and rubber washers (3).
2. See Figure 2-150. Remove nut (1) and washer (2).
3. Remove sprocket cover screw (5), washer (6) and spacer (8).
4. Remove swingarm drive/support (4) and sprocket cover (7) as an assembly.
5. Remove two screws (9) to separate sprocket cover from swingarm/drive support. Do not remove rivet holding rubber bumper (10).

## ASSEMBLY/INSTALLATION

1. See Figure 2-150. If removed, attach sprocket cover to swingarm/drive support.
  - a. Place sprocket cover behind swingarm/drive support. Align holes in cover with holes in support.
  - b. Apply LOCTITE THREADLOCKER 222 (purple) to both screws (9).
  - c. Install screws. Tighten to 12-17 **in-lbs** (1.4-1.9 Nm).
2. Apply LOCTITE THREADLOCKER 243 (blue) to screw (5). Install sprocket cover assembly with screw (5), washer (6) and spacer (8). Tighten to 4-6 **ft-lbs** (5.4-8.6 Nm).
3. See Figure 2-149. Apply LOCTITE THREADLOCKER 272 (red) to bolts (1). Place metal washer over screw and then install rubber washer. Install and tighten to 9-10 **ft-lbs** (12.2-13.6 Nm).
4. Install nut (1) and washer (2). Tighten to 30-35 **ft-lbs** (40.7-47.4 Nm).

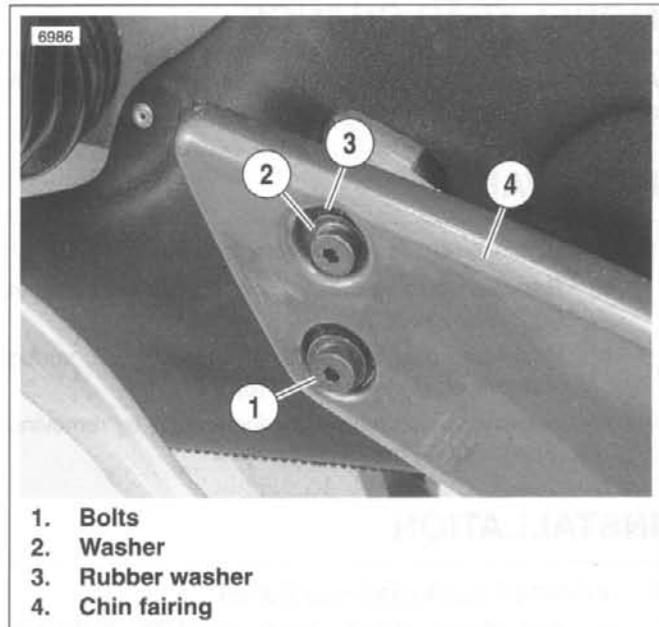


Figure 2-149. Chin Fairing, Right Side

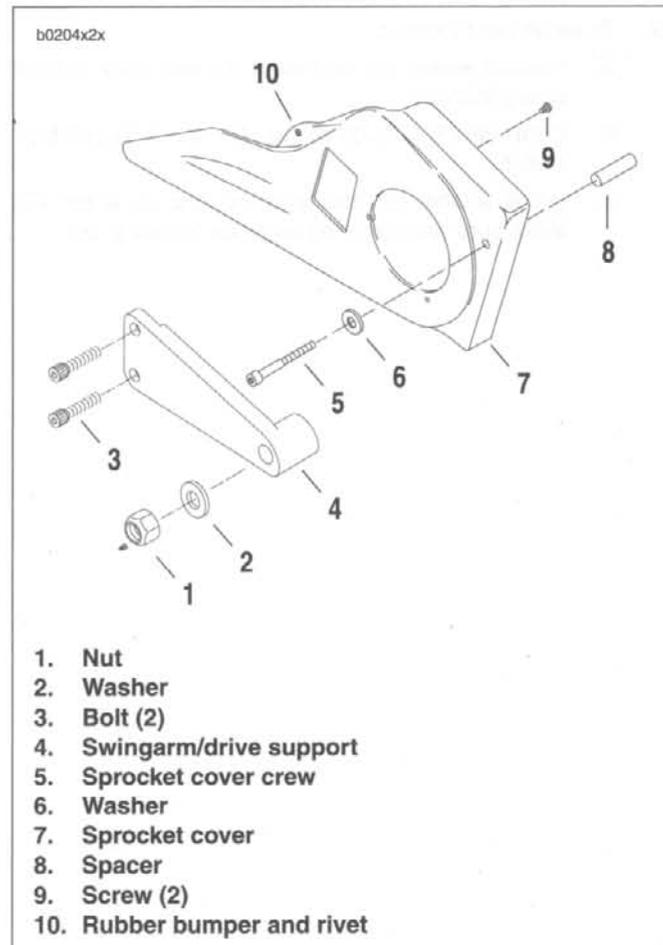


Figure 2-150. Sprocket Cover

## REMOVAL/INSTALLATION

1. Raise front wheel off floor using procedure under 1.19 STEERING HEAD BEARINGS.
2. Remove front wheel. See 2.5 FRONT WHEEL (1999 Models) or 2.6 FRONT WHEEL (2000 Models).
3. See Figure 2-151. Remove lower fender mounting screws (8) (metric), washers (9) and plastic spacers (6).
4. Remove upper fender mounting screws (3), washers (4), wire guides (5), plastic spacers (6) and locknuts (7).
5. Carefully remove fender (1) from between front forks.
6. Install in reverse order.
  - a. Tighten upper fender mounting screws (3) to 20-25 **in-lbs** (2.3-2.8 Nm).
  - b. Tighten lower fender mounting screws (8) (metric) to 10-15 **in-lbs** (1.1-1.7 Nm).

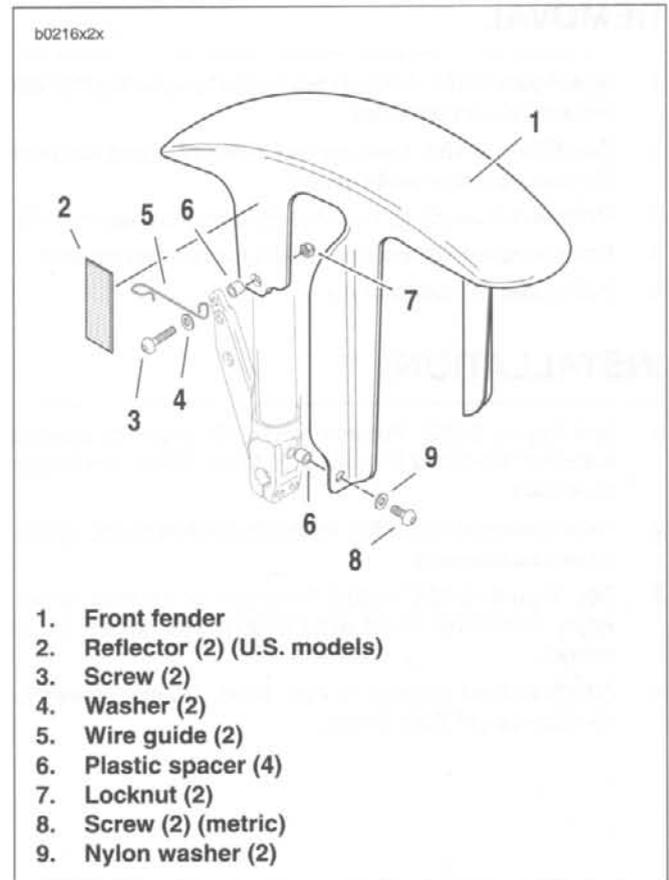


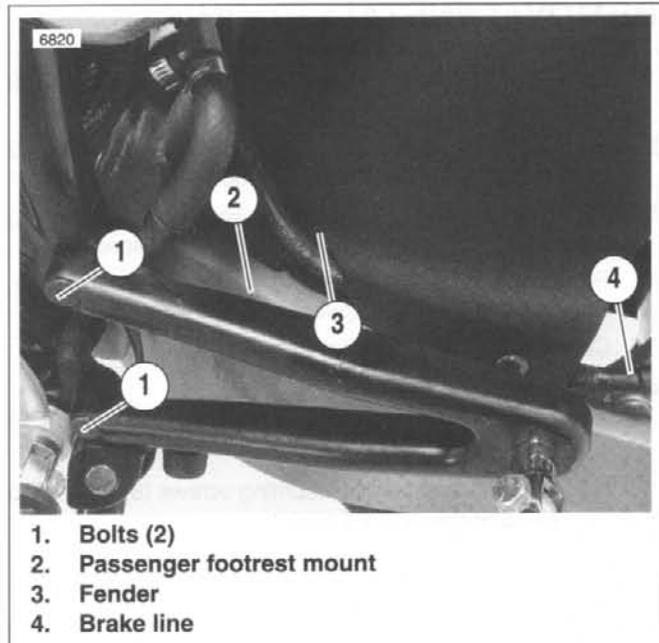
Figure 2-151. Front Fender

## REMOVAL

1. See Figure 2-152. Loosen two bolts (1) securing footrest mounts (2) on both sides.
2. See Figure 2-153. Remove two screws (1) and washers (2) from right side well nuts (4).
3. Remove screw (5) and washer (6) from front well nut (7).
4. Remove screw (8) washer (9) and clamp from left side.
5. Pull fender (3) over rear tire.

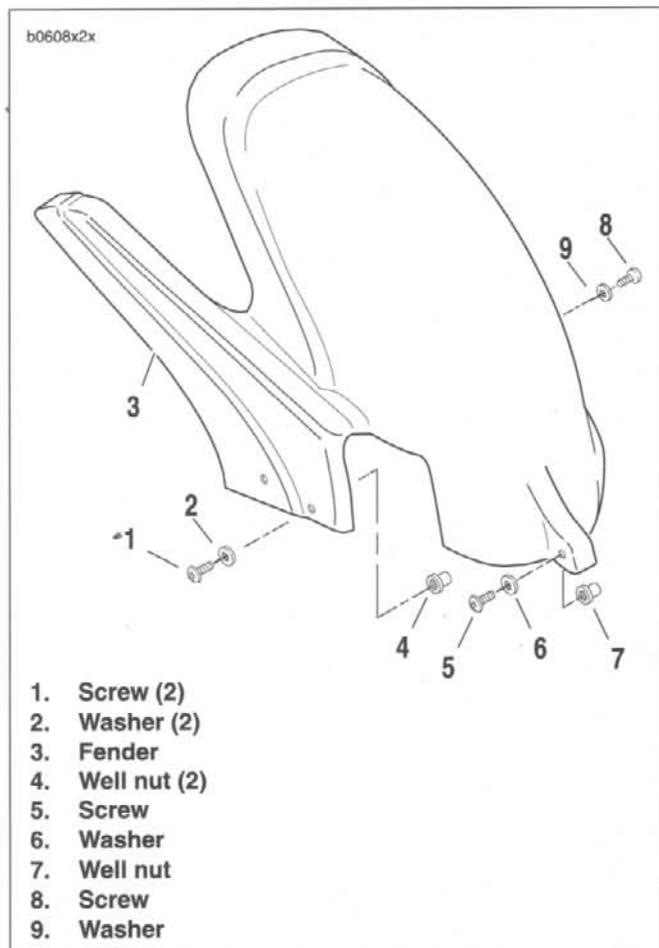
## INSTALLATION

1. See Figure 2-152. Position fender (3) over tire, making sure that the brake line (4) is on the inside of the fender as shown.
2. Have someone sit on the vehicle to compress the motorcycle's suspension.
3. See Figure 2-153. Install hardware in reverse order. Apply LOCTITE THREADLOCKER 243 (blue) to all screws.
4. Attach footrest mounts on both sides. Tighten screws to 13-16 ft-lbs (17.6-21.7 Nm).



1. Bolts (2)
2. Passenger footrest mount
3. Fender
4. Brake line

Figure 2-152. Rear Fender With Brake Line (Left Side)



1. Screw (2)
2. Washer (2)
3. Fender
4. Well nut (2)
5. Screw
6. Washer
7. Well nut
8. Screw
9. Washer

Figure 2-153. Rear Fender

## REMOVAL

1. See Figure 2-154. Remove two screws (1) and washers (2) securing lower belt guard (3) to swingarm.
2. Remove lower belt guard (3), stone guard (4) and well nuts (5).

## INSTALLATION

1. See Figure 2-155. Position stone guard (4) with well nuts (5) and lower belt guard (3) on swingarm.
2. Secure with two screws (1) and washers (2).

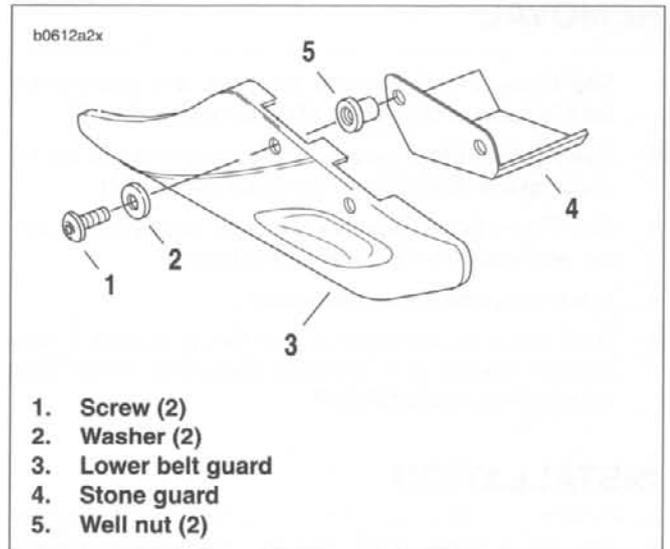


Figure 2-154. Stone Guard Installation

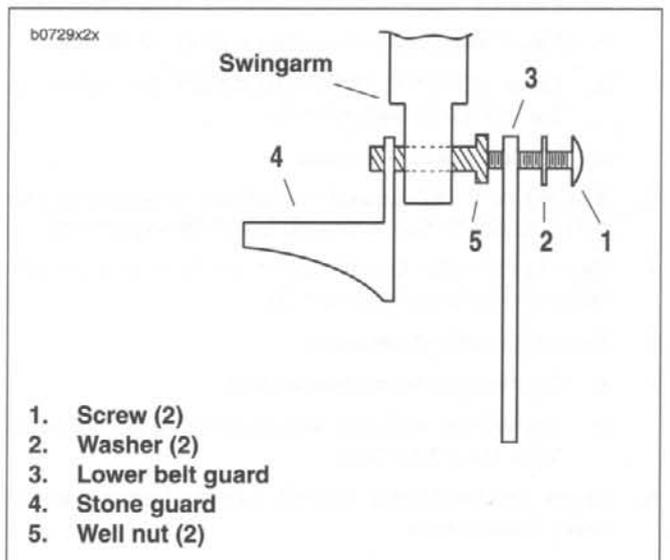


Figure 2-155. Stone Guard Mounting

## REMOVAL

1. See Figure 2-156. Remove two bolts and washers (1) from left side of chin fairing (2) near clutch cable (3).
2. See Figure 2-157. Remove bolt, washer and well nut (1) securing chin fairing (2) to chin fairing bracket (3).
3. See Figure 2-158. Remove two bolts, washers and rubber washers from right side of chin fairing.
4. Lower chin fairing from motorcycle.
5. Rear shock mount supports chin fairing bracket. If necessary, remove bolt following procedure under 2.28 REAR SHOCK ABSORBER.

## INSTALLATION

1. See Figure 2-157. If removed, install chin fairing bracket (3) on shock mounting hardware. See 2.28 REAR SHOCK ABSORBER.
2. See Figure 2-158. Install right side mounting hardware.
  - a. Install washer (2) and rubber washer (3) on bolt.
  - b. Place LOCTITE THREADLOCKER 243 (blue) on the last few threads of bolts.
  - c. Loosely install both bolts.
3. See Figure 2-157. Loosely install bolt, washer and well nut (1) to attach chin fairing (2) to chin fairing bracket.
4. See Figure 2-156. On left side of chin fairing (2), loosely install two bolts and washers (1).
5. Secure chin fairing hardware.
  - a. Tighten chin fairing bracket bolt.
  - b. Tighten left and right side chin fairing bolts to 9-10 ft-lbs (12.2-13.6 Nm).
6. Check for clutch cable contact. If contact occurs, adjust clutch cable clamp.

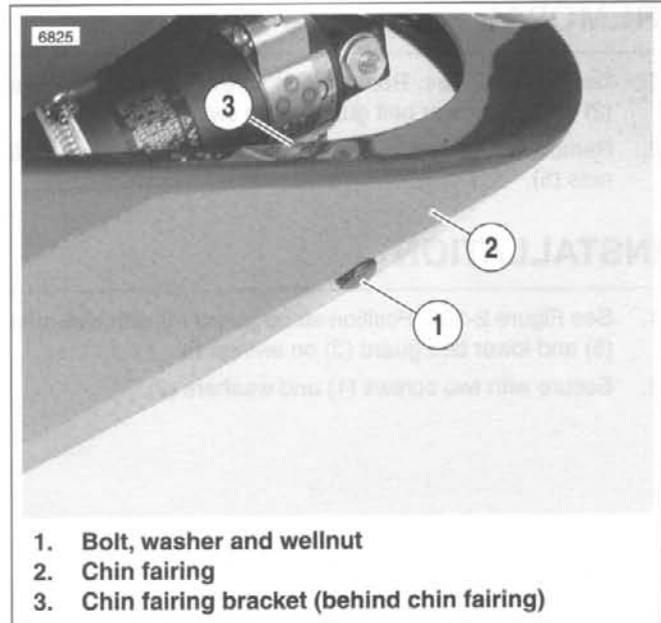


Figure 2-157. Chin Fairing Bracket

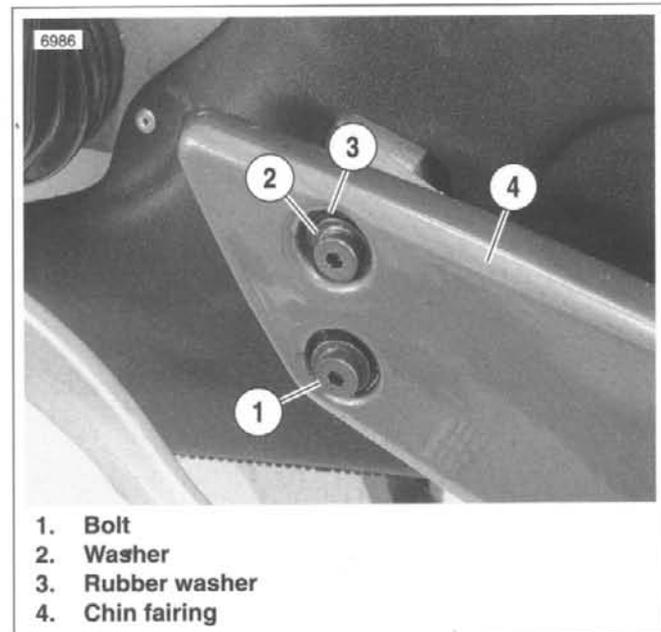


Figure 2-158. Chin Fairing, Right Side

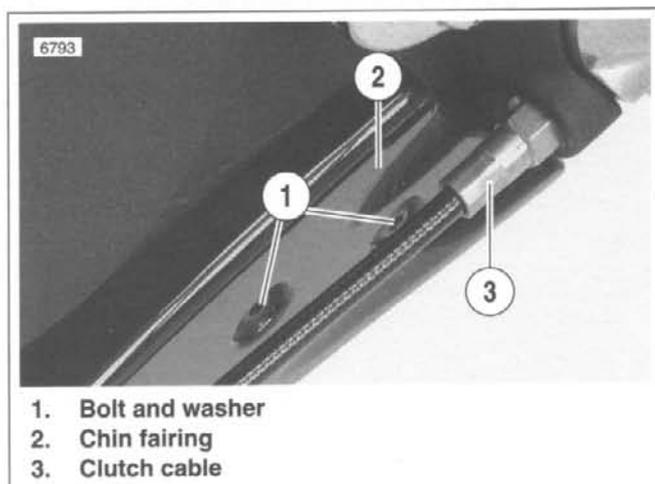


Figure 2-156. Chin Fairing, Left Side

## MODEL YEAR CHANGE

The 2000 Model Year Buell X1 fuel tank covers do not have the two vent holes present on the 1999 model covers.

## REMOVAL

1. Remove seat.
2. See Figure 2-159. Remove two fuel tank cover screws (1) and washers (2) from bracket (3). Remove bracket.
3. Cut cable strap from vapor vent hose and vent hose fitting on top of fuel tank. Detach vent hose.
4. See Figure 2-160. Remove two screws (1), washers (2) and well nuts (4) at front of tank cover.
5. Remove fuel tank cover from frame.

## INSTALLATION

1. Position fuel tank cover on frame.
2. See Figure 2-160. Secure front of fuel tank cover (3) with screws (1) and washers (2) through well nuts (4).
3. Attach vent hose to vent hose fitting with a **new** cable strap.
4. See Figure 2-159. Install bracket.
  - a. Position bracket (3) over fuel tank cover (4). Tab on bracket must face towards rear wheel.
  - b. Install two screws (1) and washers (2). Tighten to 9-11 ft-lbs (12.2-14.9 Nm).

**⚠ WARNING**

After installing seat, pull upward on front of seat to be sure it is locked in position. If seat is loose, it could shift during vehicle operation and startle the rider, causing loss of control which could result in death or serious injury.

5. Install seat.

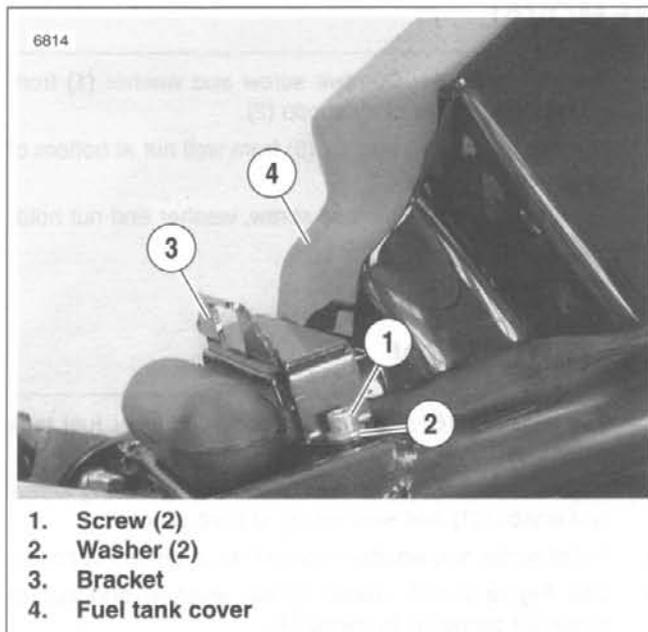


Figure 2-159. Fuel Tank Cover Bracket

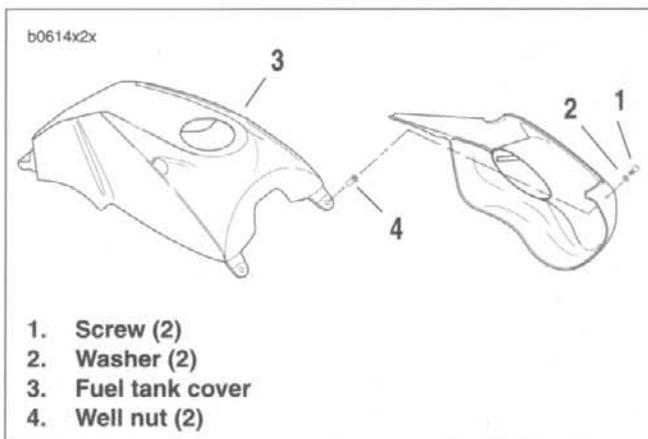


Figure 2-160. Fuel Tank Cover (1999 Model Shown)

## REMOVAL

1. See Figure 2-161. Remove screw and washer (1) from well nut (3) at front of air scoop (2).
2. Remove screw and washer (5) from well nut at bottom of air scoop.
3. See Figure 2-162. Remove screw, washer and nut holding air scoop (1) to clamp (3).
4. Remove air scoop.

## INSTALLATION

1. See Figure 2-161. Position air scoop (2) over fuel tank cover (4).
2. Fasten air scoop (2) to fuel tank cover (4) using screw and washer (1) and well nut (3) at front of scoop.
3. Install screw and washer into well nut at bottom of scoop.
4. See Figure 2-162. Install screw, washer, and nut to attach air scoop (1) to clamp (3).

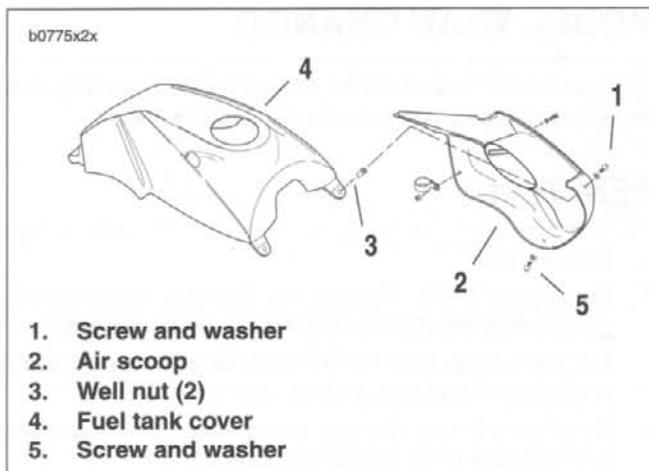


Figure 2-161. Air Scoop

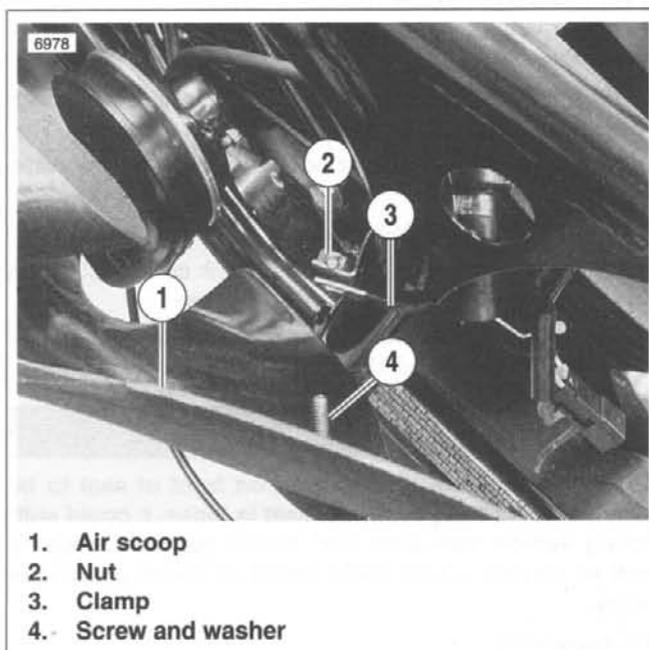


Figure 2-162. Air Scoop Clamp

## REMOVAL

1. See Figure 2-163. Remove two screws and washers (1) and nuts and washers (2) securing front of trunk (4) to tail section (5).
2. Remove two screws and washers (3) securing trunk (4) to tail section (5) under edge of tail section.
3. See Figure 2-164. Remove screws and washers (1) from indentation in license plate bracket (2).
4. Push down on center of trunk until trunk pops free of tail section.

## INSTALLATION

1. See Figure 2-163. Position trunk (4) in tail section (5).
2. Secure front of trunk (4) to tail section (5) with two screws and washers (1) and washers and nuts (2).
3. Secure trunk (4) to tail section (5) with two screws and washers (3) under edge of tail section.
4. See Figure 2-164. Secure trunk to license plate bracket (2) with screws and washers (1).

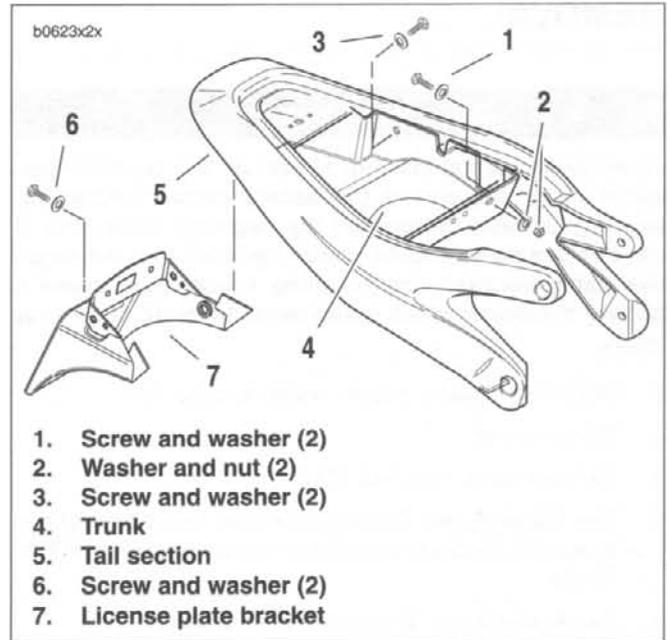


Figure 2-163. Tail Section with Trunk

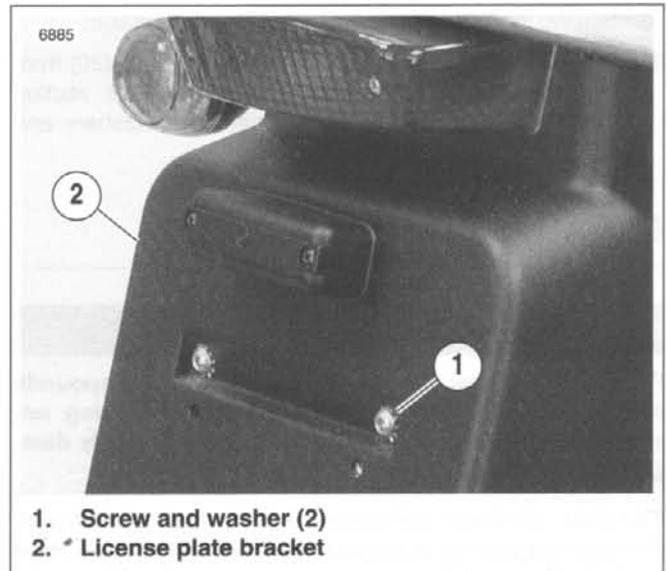


Figure 2-164. License Plate Bracket

## REMOVAL

### ⚠ WARNING

To avoid accidental start-up of vehicle and possible personal injury, disconnect the battery cables before proceeding. Always disconnect the negative cable first. If the positive cable should contact ground with the negative cable installed, the resulting sparks may cause a battery explosion which could result in death or serious injury.

1. Disconnect battery cables, negative cable first.
2. Remove seat.
3. Remove trunk. See 2.45 TRUNK.
4. See Figure 2-165. Remove fuse/relay block bracket fasteners (2). Remove bracket (1) containing fuse and relay blocks.
5. See Figure 2-166. Disconnect tail harness.
6. See Figure 2-167. Remove two screws and washers (1) on electronic control module (2).
7. See Figure 2-168. Remove two nuts (2) and washers (8) holding ignition module bracket (17) to tail section.
8. Remove two nuts (18), washers (19) and bolts (20) from the lower frame connection. Rotate the tail section upward and remove the two upper nuts, washers and bolts.

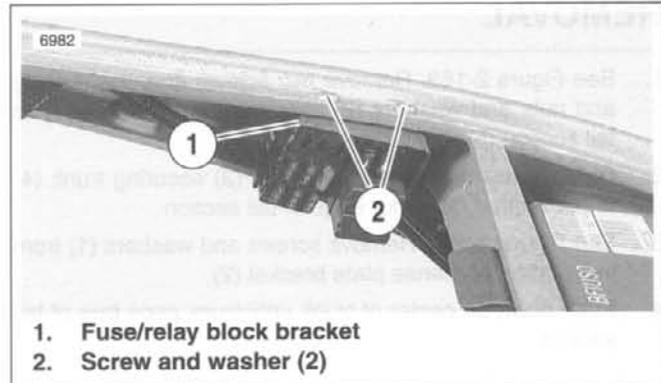


Figure 2-165. Fuse Block



Figure 2-166. Wiring Harness

## CLEANING

### CAUTION

Do not use wheel care products or other compounds developed specifically for cleaning and polishing uncoated aluminum. These cleaners could potentially damage the tail section finish.

The cast aluminum tail section has a clear powdercoat. Because the surface is not bare polished aluminum, it must be cleaned using only mild soap and warm water. After washing, always dry the surface using a clean, soft cloth.

## DISASSEMBLY

1. See Figure 2-169. Remove two nuts (metric) (4) and washers (5) from tail lamp studs to detach the tail lamp (2). Pull the three wires from back of tail lamp.
2. See Figure 2-168. Remove two allen bolts (15), washers (3) and nuts (10) to detach seat lock (11) from tail section (14).
3. See Figure 2-169. Remove turn signal nuts (metric) (6) and washers (7). Disconnect bullet connectors.
4. Tilt license plate bracket (3) forward to remove.

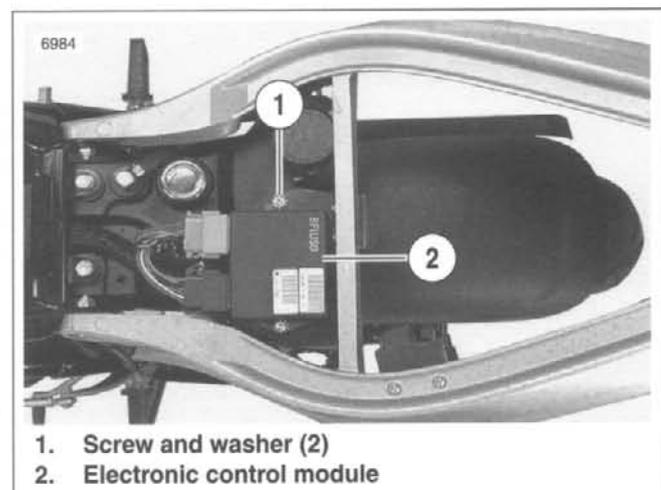
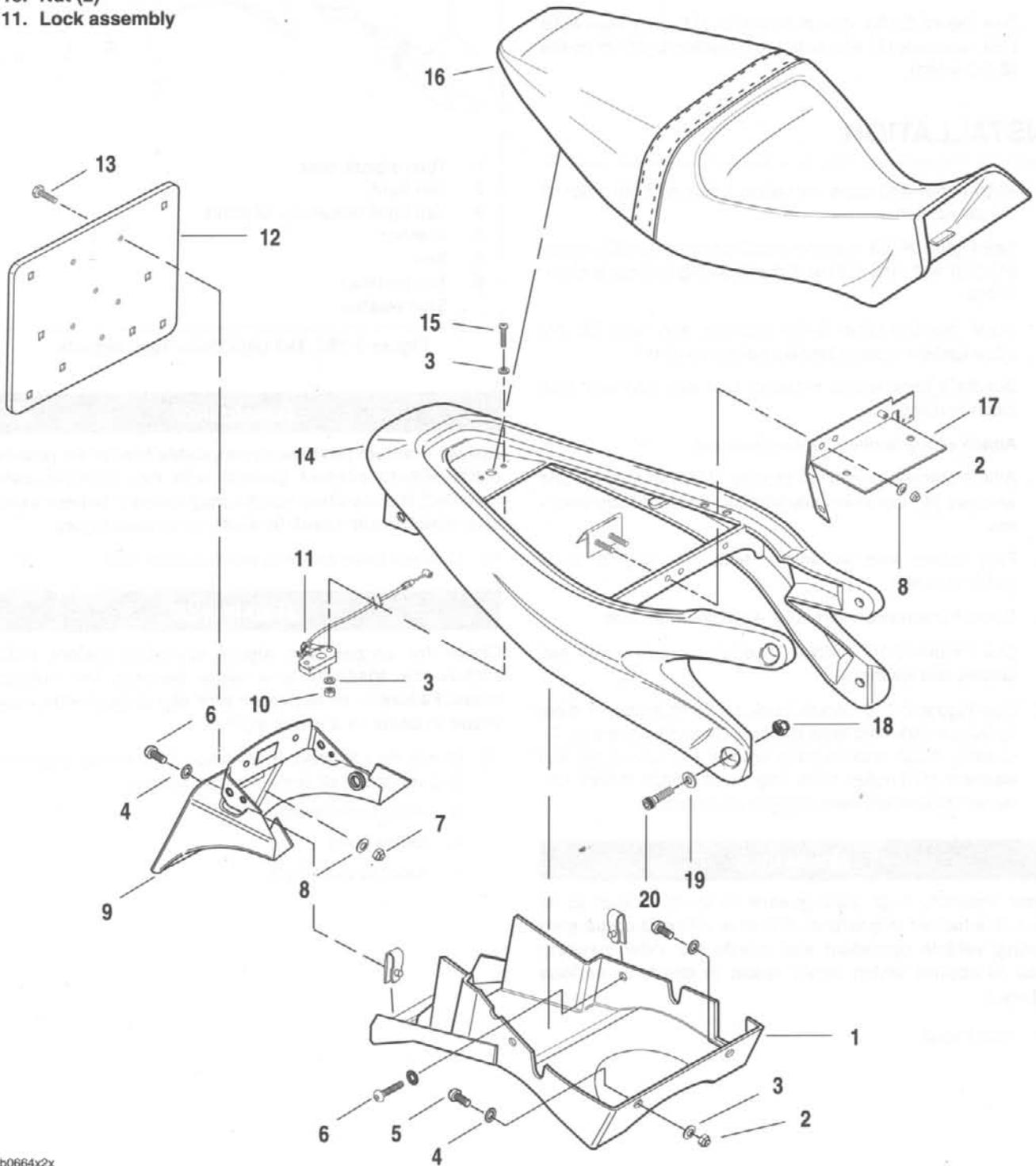


Figure 2-167. Electronic Control Module

1. Trunk
2. Nut (3)
3. Washer (5)
4. Washer (6)
5. Screw (2)
6. Screw (4)
7. Nut (4)
8. Washer (6)
9. Bracket, license plate
10. Nut (2)
11. Lock assembly

12. Holder, license plate
13. Screw (4)
14. Tail section
15. Screw (2)
16. Seat
17. Bracket, electronic control
18. Nut (4)
19. Washer (4)
20. Screw (4)



b0664x2x

Figure 2-168. Tail Section (1999 Configuration Shown)

## ASSEMBLY

1. See Figure 2-168. Slide license plate bracket (9) over tail section (14).
2. See Figure 2-169. Install turn signals (1), with drain holes facing down, with star washers (7) and nuts (6) (metric). Tighten to 96-120 **in-lbs** (10.8-13.6 Nm). See 7.14 TURN SIGNALS to connect wiring.
3. Install nuts (metric) (4) and washers (5) for tail lamp (2). Do not connect wires until after installation.
4. See Figure 2-168. Attach seat lock (11) with allen bolts (15), washers (3) and nuts (10). Tighten to 20-25 **in-lbs** (2.3-2.8 Nm).

## INSTALLATION

1. Align upper and lower mounting holes on both sides of the tail section.
2. See Figure 2-168. Loosely install upper bolts (20), washers (19) and nuts (18) and check wiring and parts clearances.
3. Install the two other bolts, washers and nuts. Do not allow ignition module bracket below top of tail.
4. Bundle lighting wiring between seat lock and seat lock catch housing.
5. Attach wiring harness to main harness.
6. Attach bracket for ignition module (17) with nuts (2) and washers (8). Install module with two bolts and star washers.
7. Fully tighten four tail section bolts (20) to 9-11 ft-lbs (12.2-14.9 Nm).
8. Route transmission vent tube along the right side.
9. See Figure 2-165. Install fuse/relay bracket with two screws and washers.
10. See Figure 2-168. Install trunk (1) to fit inside of clips. Loosely install front bolts (5), nuts (2) and washers (3, 4). Loosely install license plate bracket (9) screws (6) and washers (4) finalize trunk alignment. Install middle fasteners (6) with washers. Tighten all fasteners.

### **WARNING**

After installing seat, pull upward on front of seat to be sure it is locked in position. If seat is loose, it could shift during vehicle operation and startle the rider, causing loss of control which could result in death or serious injury.

11. Install seat.

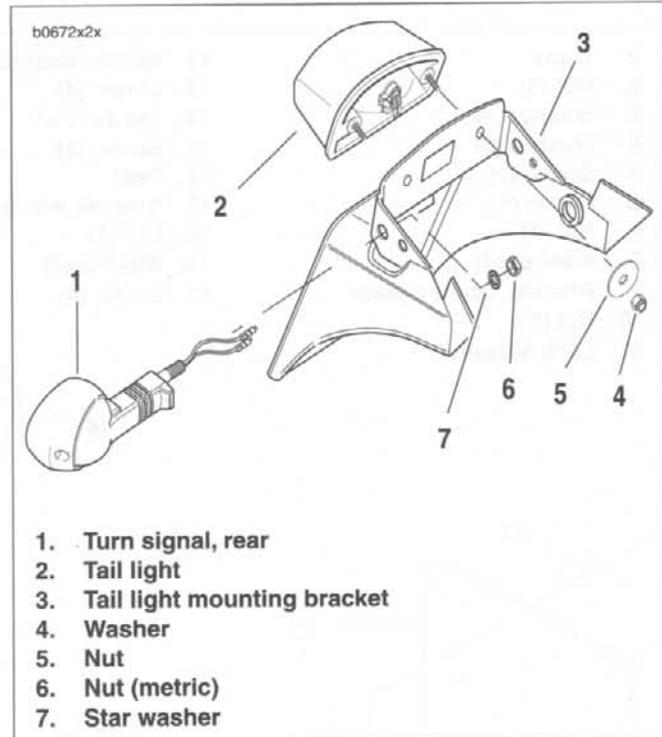


Figure 2-169. Tail Light/Rear Turn Signals

### **WARNING**

Always connect positive battery cable first. If the positive cable should contact ground with the negative cable installed, the resulting sparks may cause a battery explosion which could result in death or serious injury.

12. Connect battery cables, positive cable first.

### **WARNING**

Check for proper turn signal operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper turn signal operation could result in death or serious injury.

13. Check the following. If operation fails, reread procedure and verify that all steps were performed.
  - a. Rear turn signals.
  - b. Brake lamp.
  - c. License plate light.

## REMOVAL

1. See Figure 2-170. Remove two screws and nylon washers on each side.
2. If necessary, remove both windscreen brackets following procedure under 2.24 FRONT FORK.

## INSTALLATION

1. If removed, install both windscreen brackets. See 2.24 FRONT FORK.
2. Align windscreen on right and left brackets.
3. See Figure 2-170. Install two screws and nylon washers on each side. Tighten securely.

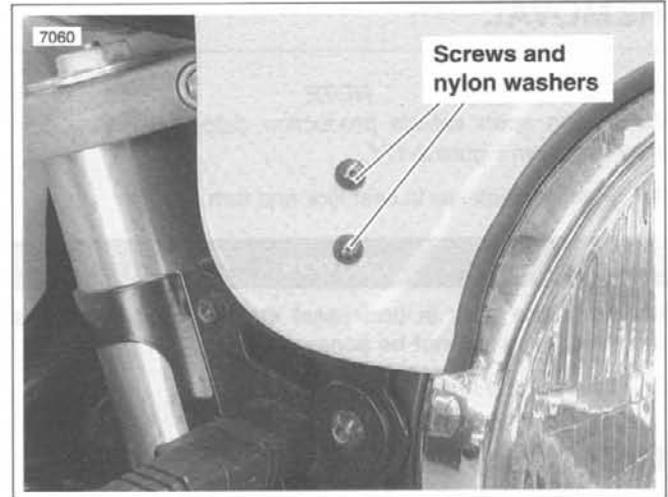


Figure 2-170. Windscreen, Right Side

## REMOVAL

**NOTE**

Depending upon vehicle production date, lock orientation may vary from Figure 2-171.

1. Place ignition key in seat lock and turn.

**CAUTION**

Do not place keys in underseat storage area. If seat is installed, keys will not be accessible.

2. Lift seat and remove.

## INSTALLATION

1. Install seat by sliding metal locating tab on underside of seat into opening on motorcycle.
2. Press down on seat until seat catch clicks.

**WARNING**

After installing seat, pull upward on front of seat to be sure it is locked in position. If seat is loose, it could shift during vehicle operation and startle the rider, causing loss of control which could result in death or serious injury.

3. Turn ignition key and remove from seat lock.

## ATTACHMENT POINTS

**CAUTION**

Helmet holders will not prevent helmet theft. See your Buell dealer for helmet locking solutions.

See Figure 2-172. Two metal tabs on the tail section serve as helmet holders (1). Place helmet D-ring under tab. Install and lock seat to temporarily secure helmet while motorcycle is stationary.

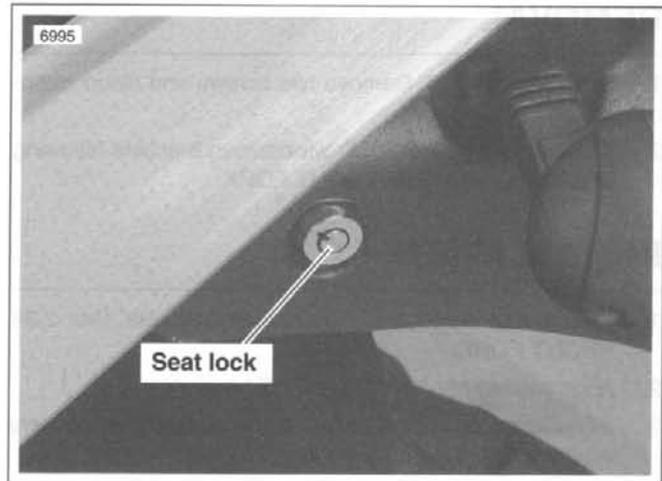


Figure 2-171. Seat Lock

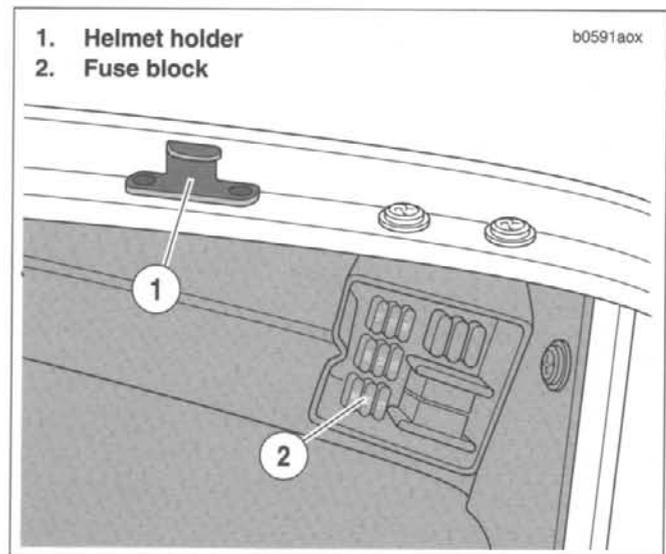


Figure 2-172. Helmet Holder

## MODEL YEAR CHANGE

All 2000 Model X1 motorcycles are equipped with a **new** helmet hook and cable assembly.

## REMOVAL

### NOTE

Depending upon vehicle production date, lock orientation may vary from Figure 2-173.

1. Place ignition key in seat lock and turn.

### CAUTION

Do not place keys in underseat storage area. If seat is installed, keys will not be accessible.

2. Lift seat and remove.

## INSTALLATION

1. Install seat by sliding metal locating tab on underside of seat into opening on motorcycle.
2. Press down on seat until seat catch clicks.

### WARNING

After installing seat, pull upward on front of seat to be sure it is locked in position. If seat is loose, it could shift during vehicle operation and startle the rider, causing loss of control which could result in death or serious injury.

3. Turn ignition key and remove from seat lock.

## ATTACHMENT POINTS

### CAUTION

Helmet hook will not prevent helmet theft. See your Buell dealer for helmet locking solutions.

See Figure 2-174. Two metal hooks, cables and locktabs on the tail section serve as helmet holders. To store helmet, place cable through helmet D-ring. Place D-ring on helmet hook and route cable loop under locktabs. Install and lock seat to store helmet while motorcycle is stationary.

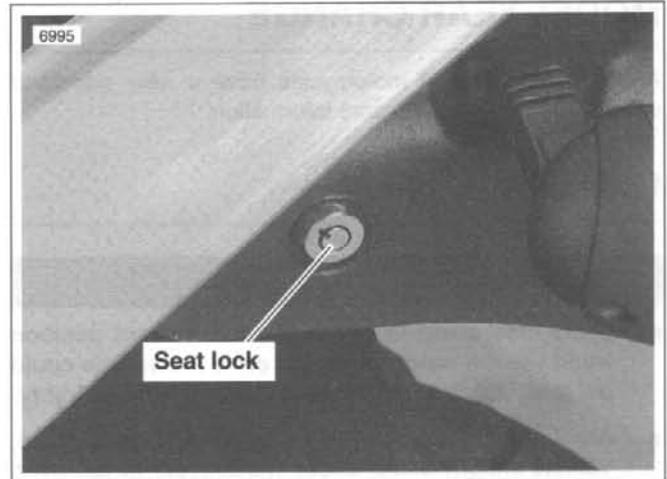


Figure 2-173. Seat Lock

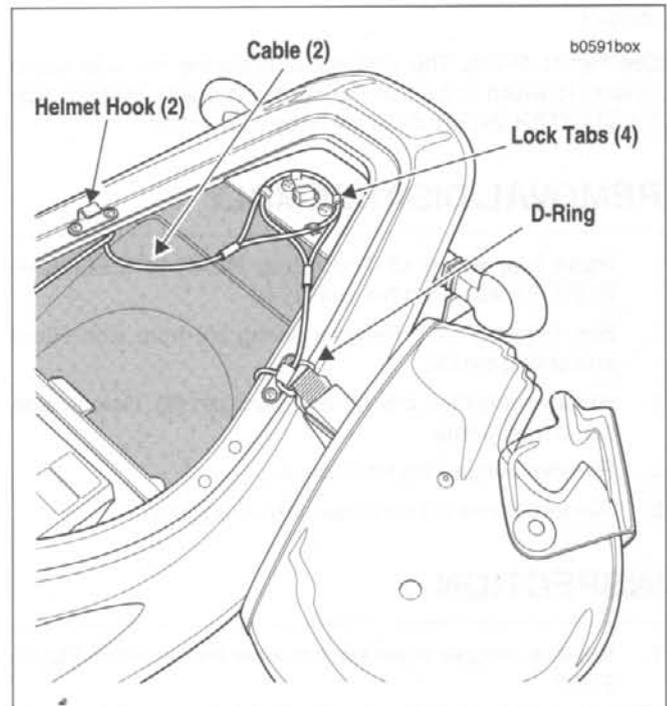


Figure 2-174. Helmet Hook

## MODEL YEAR CHANGE

All 2000 Model Buell motorcycles have a **new** sidestand switch. See Section 7 for more information.

## GENERAL

### ⚠ WARNING

- If the side stand is not in the full forward position when vehicle weight is rested on it, the vehicle could fall over, which could result in death or serious injury.
- Always park motorcycle on a level, firm surface. Vehicle weight could cause motorcycle to fall over, which could result in death or serious injury.

The side stand is located on the left side of the motorcycle. The side stand swings outward to support the motorcycle for parking.

See Figure 2-175. The side stand activates the side stand switch (1) which is part of the starter interlock system. See 7.5 STARTER INTERLOCK for more information.

## REMOVAL/DISASSEMBLY

1. Raise rear wheel off floor using REAR WHEEL SUPPORT STAND (Part No. B-41174).
2. See Figure 2-176. Remove spring (6) from side stand and spring pin (5).
3. Remove retaining clip (7) and pivot pin (8). Detach side stand from frame.
4. Remove bumper (3) from frame.
5. Remove screw (2) and side stand dragger (1).

## INSPECTION

1. Replace dragger when worn to wear line shown in Figure 2-177.
2. Test the side stand in the following manner. Without vehicle weight resting on it, side stand should move freely into extended (down) and retracted (up) positions.
3. Check sidestand switch (starter interlock) for proper operation after the first 500 miles and every 2500 miles thereafter. See 7.5 STARTER INTERLOCK.

## ASSEMBLY/INSTALLATION

1. See Figure 2-176. Attach bumper (3) to frame.
2. Attach side stand dragger (1) to side stand with screw (2).
3. Apply LOCTITE ANTI-SEIZE to pivot pin (8). Install side stand using pivot pin (8) and retaining clip (7). Do not crush side stand switch during installation.
4. Connect spring (6) to side stand and spring pin (5).
5. Remove REAR WHEEL STAND.

6. With side stand retracted, there should be 0.5 in. (12.7 mm) clearance between side stand and swingarm at the closest point of contact.

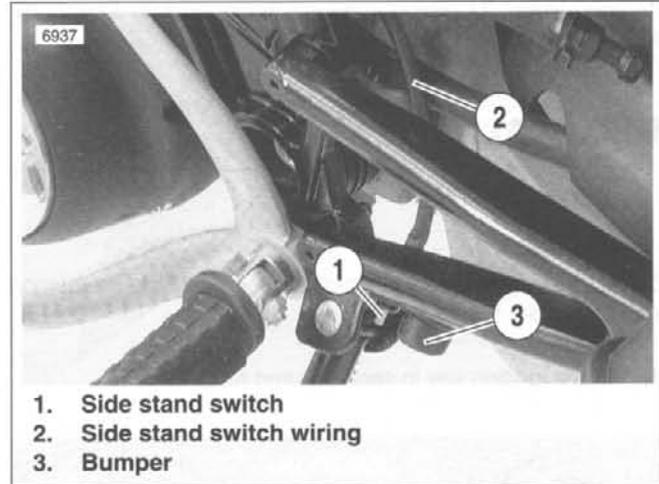


Figure 2-175. Side Stand Switch (1999 Model Shown)

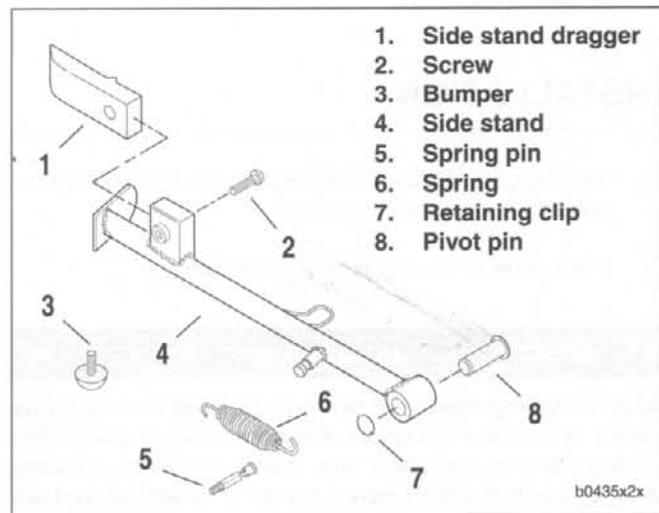


Figure 2-176. Side Stand

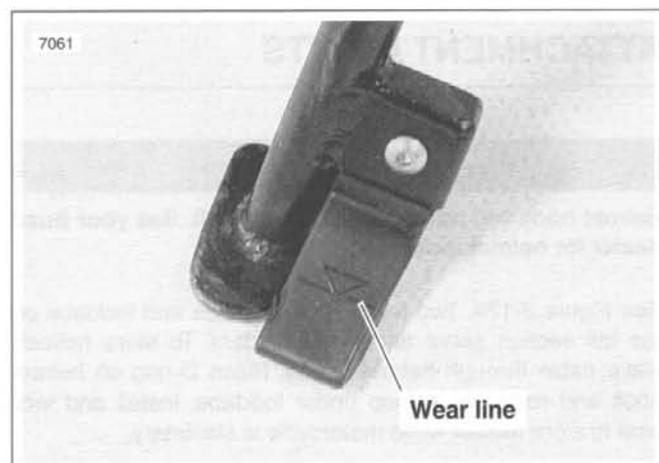


Figure 2-177. Side Stand Dragger Wear Limit